

PROCEEDINGS

OF THE

Biological Society of Washington

QH
1
B4

VOLUME 58

1945

-60
-47

WASHINGTON
PRINTED FOR THE SOCIETY

COMMITTEE ON PUBLICATIONS

HERBERT FRIEDMANN, *Chairman*

REMINGTON KELLOGG

F. C. LINCOLN

E. P. KILLIP

J. S. WADE

PUBLICATION NOTE

By a change in the By-Laws of the Biological Society of Washington, effective March 27, 1926, the fiscal year now begins in May, and the officers will henceforth hold office from May to May. This, however, will make no change in the volumes of the Proceedings, which will continue to coincide with the calendar year. In order to furnish desired information, the title page of the current volume and the list of newly elected officers and committees will hereafter be published soon after the annual election in May.

PRESS OF
H. L. & J. B. McQUEEN, INC.
WASHINGTON, D. C.

OFFICERS AND COUNCIL
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON
(FOR 1945-1946)

(ELECTED MAY 19, 1945)

OFFICERS

President

F. THONE

Vice-Presidents

(In the order of election)

J. S. WADE
W. L. SCHMITT

J. W. ALDRICH
F. C. LINCOLN

Recording Secretary

S. F. BLAKE

Corresponding Secretary

ROBERT S. BRAY

Treasurer

ALLEN DUVAL

COUNCIL

Elected Members

I. N. HOFFMAN
J. E. BENEDICT, JR.

MALCOLM DAVIS
J. A. FOWLER

D. E. McHENRY

Ex-Presidents

PAUL BARTSCH
W. B. BELL
C. E. CHAMBLISS
E. A. GOLDMAN
W. P. HAY
A. D. HOPKINS
L. O. HOWARD

H. B. HUMPHREY
H. H. T. JACKSON
H. C. OBERHOLSER
T. S. PALMER
S. A. ROHWER
E. P. WALKER
A. WETMORE

STANDING COMMITTEES—1945-1946

Committee on Communications

F. C. BISHOPP
C. COTTAM

R. F. GRIGGS
S. F. HILDEBRAND

D. E. McHENRY
F. F. SMITH

Committee on Zoological Nomenclature

AUSTIN H. CLARK, *Chairman*

PAUL BARTSCH
A. WETMORE

H. H. T. JACKSON
C. F. W. MUESEBECK

Committee on Publications

HERBERT FRIEDMANN, *Chairman*

REMINGTON KELLOGG E. P. KILLIP F. C. LINCOLN J. S. WADE

Trustees of Permanent Funds

J. E. GRAF (1945-1947), *Chairman*

J. S. WADE (1945-1947)

EX-PRESIDENTS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

- *THEODORE N. GILL, 1881, 1882
- *CHARLES A. WHITE, 1883, 1884
- *G. BROWN GOODE, 1885, 1886
- *WILLIAM H. DALL, 1887, 1888
- *LESTER F. WARD, 1889, 1890
- *C. HART MERRIAM, 1891, 1892
- *C. V. RILEY, 1893, 1894
- *GEO. M. STERNBERG, 1895, 1896
- L. O. HOWARD, 1897, 1898
- *FREDERICK V. COVILLE, 1899, 1900
- *F. A. LUCAS, 1901, 1902
- *B. W. EVERMANN, 1903, 1904
- *F. H. KNOWLTON, 1905, 1906
- *L. STEJNEGER, 1907, 1908
- T. S. PALMER, 1909, 1910
- *DAVID WHITE, 1911
- *E. W. NELSON, 1912, 1913
- PAUL BARTSCH, 1914, 1915
- W. P. HAY, 1916, 1917
- *J. N. ROSE, 1918
- *HUGH M. SMITH, 1919
- A. D. HOPKINS, 1920
- *N. HOLLISTER, 1921
- *VERNON BAILEY, 1922
- *A. S. HITCHCOCK, 1923
- *J. W. GIDLEY, 1924
- S. A. ROHWER, 1925
- H. C. OBERHOLSER, 1926-1927
- E. A. GOLDMAN, 1927-1929
- ALEXANDER WETMORE, 1929-1931
- H. H. T. JACKSON, 1931-1933
- C. E. CHAMBLISS, 1933-1936
- *H. C. FULLER, 1936-1938
- W. B. BELL, 1938-1940
- E. P. WALKER, 1940-1942
- H. B. HUMPHREY, 1942-1944

*Deceased.

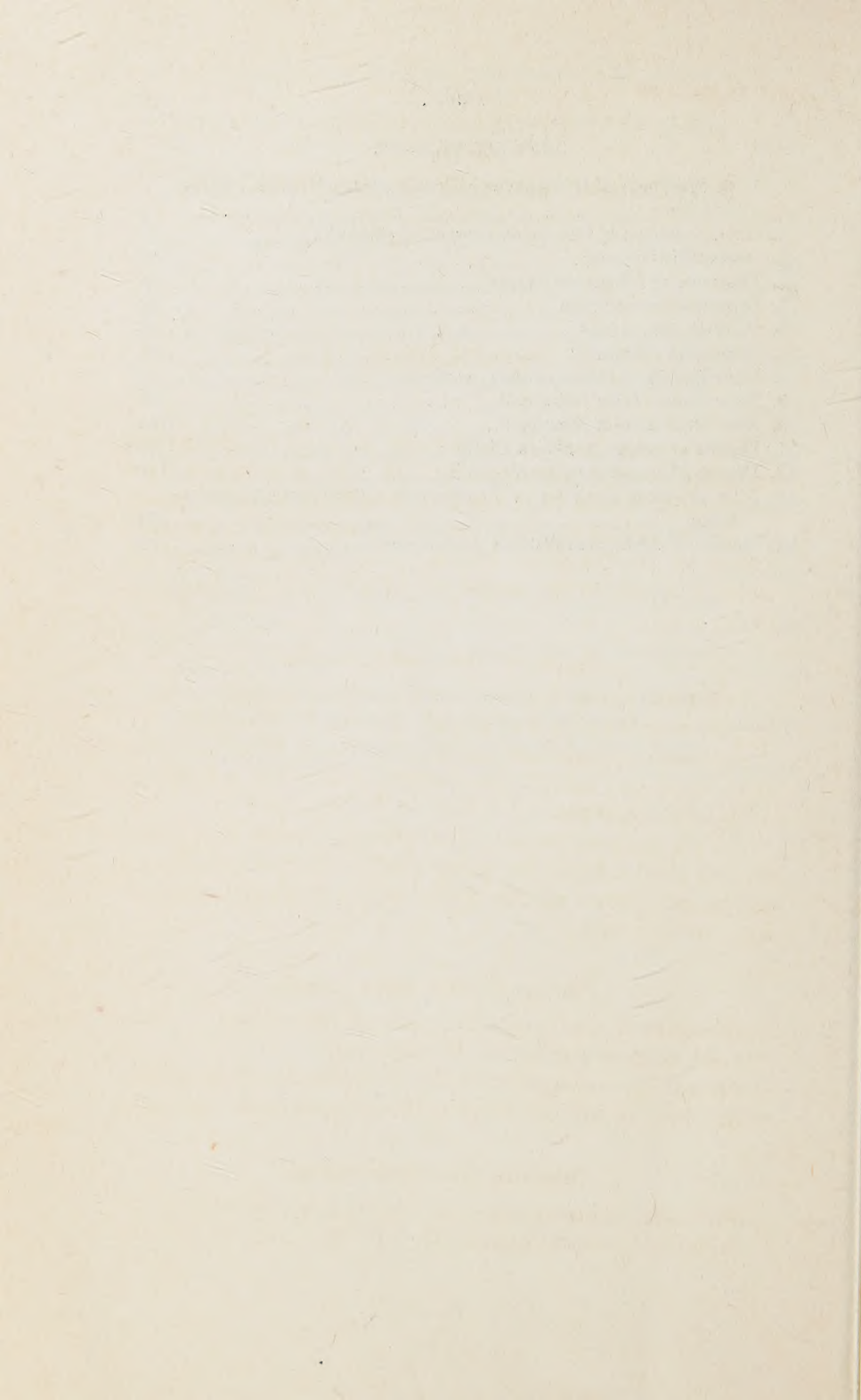
TABLE OF CONTENTS.

Officers and Committees for 1945.....	iii-iv
Proceedings for 1945.....	ix-xii
A New Species of <i>Markea</i> from Colombia, by C. V. Morton.....	1-2
A New Pronghorn Antelope from Sonora, by E. A. Goldman....	3-4
A New <i>Gerrhonotus</i> Lizard from Utah, by Angus M. Woodbury..	5-10
Notes on Fishes in the Zoological Museum of Stanford University.	
XIV.—A New Genus and Three New Species of Gobies from the Philippines, by Albert W. C. T. Herre.....	11-16
A Review of the Giant Antpitta <i>Grallaria gigantea</i> , by Alexander Wetmore.....	17-20
A New Genus and Species of Squids from the Philippines, by Harald A. Rehder.....	21-26
General Notes.....	27-28
A Tricarpellary Maple, by William A. Dayton.....	27-28
A New South American <i>Leptotyphlops</i> , by Hobart M. Smith and Leonard E. Laufe.....	29-32
On Some Millipeds from Saipan, by Ralph V. Chamberlin.....	33-38
The Identity of <i>Desmognathus phoca</i> (Matthes) and of <i>Desmognathus monticola</i> Dunn, by Arnold B. Grobman.....	39-44
A New Subspecies of <i>Euscarthmornis zosterops</i> , by John T. Zimmer.....	45-46
New Scincid Lizards of the Genera <i>Tropidophorus</i> and <i>Lygosoma</i> from New Guinea, by Arthur Loveridge.....	47-52
New Tree-Frogs of the Genera <i>Hyla</i> and <i>Nyctimystes</i> from New Guinea, by Arthur Loveridge.....	53-58
A New Species of <i>Aedes</i> from the Caroline Islands, by D. S. Farner.....	59-62
A New <i>Tomocyclus</i> from Mexico, by Paul Bartsch.....	63-64
Two Rats from Morotai Island, by Remington Kellogg.....	65-68
A New Australian Naked-tailed Rat (<i>Melomys</i>), by Remington Kellogg.....	69-72
Notes on Fishes in the Zoological Museum of Stanford University.	
XVIII.—Two New Species of <i>Tamanka</i> , with a Key to the Species from the Philippines and China, by Albert W. C. T. Herre.....	73-76
XIX.—Two New Philippine Gobies, with Key to the Genera of Gobies with Vomerine Teeth.....	77-82
A New Ant-thrush from Venezuela, by Herbert Friedmann.....	83-84
	(v)

The Taxonomic Status of Some Chipmunks of the Genus <i>Eutamias</i> in Southwestern Utah, by Ross Hardy.....	85-88
General Notes.....	89-90
Notes on <i>Camophora coccinea</i> (Blumenbach) in Maryland and the District of Columbia Vicinity, by J. A. Fowler.....	89-90
New and Interesting Spiders from Maryland, by Martin H. Muma.....	91-104
A New <i>Cacomistle</i> from Guerrero, by E. A. Goldman.....	105-106
A New <i>Eptesicus</i> from Jamaica, by H. Harold Shamel.....	107-110
A New Blind Snake (<i>Typhlops towelli</i>) from Darwin, Australia, by Arthur Loveridge.....	111-112
Two New Birds from the Upper Rio Negro, Brazil, by Herbert Friedmann.....	113-116
The Genus <i>Nyctiprogne</i> , by Herbert Friedmann.....	117-120
Two New Philippine Rodents, by Remington Kellogg.....	121-124
A New Race of <i>Penelope argyrotis</i> from Colombia, by Boardman Conover.....	125-126
Two New Species of <i>Cirsotrema</i> (Epitoniidae) from Florida, by Harald H. Rehder.....	127-130
General Notes.....	131-132
Range Extension for <i>Eumeces inexpectatus</i> Taylor, by Richard L. Hoffman.....	131-132
The Cixiini of the Lesser Antilles (Homoptera: Fulgoroidea), by R. G. Fennah.....	133-146
The Status of <i>Thamnophis butleri</i> Cope, and a Redescription of <i>Thamnophis brachystoma</i> (Cope), by Albert G. Smith.....	147-154
Further Notes on the <i>Aedes scutellaris</i> Group (Diptera, Culicidae), by Alan Stone and D. S. Farner.....	155-162

LIST OF PLATES.

1. Type Specimen of <i>Gerrhonotus coeruleus utahensis</i> , Utah Alligator Lizard.....	9
2. Head Scalation of <i>Gerrhonotus coeruleus utahensis</i>	10
3. <i>Uroteuthis bartschi</i>	26
4. Planetree or Sycamore Maple.....	28
5. <i>Leptotyphlops striatula</i>	32
6. <i>Phagostrophus riseri</i>	36
7. <i>Saipanella marianna</i>	37
8. Distribution of <i>Desmognathus monticola</i>	43
9. New Spiders from Maryland.....	103
10. New Spiders from Maryland.....	104
11. Details of Lesser Antillean Cixiini.....	145
12. Details of Lesser Antillean Cixiini.....	146
13. Map showing localities of <i>Thamnophis butleri</i> and <i>T. brachystoma</i>	154
14. Details of <i>Aedes paullusi</i> and <i>A. horrescens</i>	162



PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

PROCEEDINGS.

The Society meets from October to May on the second Saturday of each month at 8 P. M. All meetings in 1945 were held in Room 43 of the U. S. National Museum, except the 947th and 949th meetings, which were held in the auditorium of the National Museum, and the 950th meeting, which was held in the restaurant of the National Zoological Park.

January 13, 1945—946th Meeting.

President Thone in the chair; 60 persons present.

New members elected: Robert Belton, F. Manfredi.

Informal communications: M. B. Waite, Note on curing sweet potatoes, and Note on effect of monthly distribution of rainfall on crops.

Formal communications: J. A. Fowler, Distributional note on two local salamander subspecies; L. W. Swift, A glimpse of National Forest wildlife for the hunter, fisherman, scientist, and outdoor man.

February 10, 1945—947th Meeting.

President Thone in the chair; 60 persons present.

New member elected: J. W. Gebhart.

Formal communication: W. C. Lowdermilk, Collaboration with China in soil conservation to increase food production.

March 10, 1945—948th Meeting.

President Thone in the chair; 76 persons present.

Informal communications: M. B. Waite, Note on botanical

specimens collected by him in Illinois in 1884, and Note on deer population in Ogle County, Illinois; F. Thone, Exhibition of new biological publications.

Formal communication: M. D. Burrill, Alaskan scenes and biology.

April 14, 1945—949th Meeting.

President Thone in the chair; 50 persons present.

New member elected: A. J. Coupe.

Informal communications: M. B. Waite, Exhibition of new biological publications.

Formal communications: H. B. Humphrey, The making of a naturalist; G. W. Trayer, The magic of new wood products.

May 17, 1945—950th Meeting.

President Thone in the chair; 50 persons present.

Formal communications: J. P. E. Morrison, Zoogeographic notes on some North American snails; R. K. Beattie, Angkor, the jungle-buried city.

May 26, 1945—951st Meeting.

SIXTY-SIXTH ANNUAL MEETING.

President Thone in the chair; 9 persons present.

New member elected: Albert G. Smith.

Reports were received from the Recording Secretary, Acting Corresponding Secretary, and Treasurer. The following officers and members of council were elected: President, Frank Thone; Vice Presidents, J. S. Wade, W. L. Schmitt, J. W. Aldrich, F. C. Lincoln; Recording Secretary, S. F. Blake; Corresponding Secretary, R. S. Bray; Treasurer, Allen J. Duvall; Members of the Council, I. N. Hoffman, J. E. Benedict, Jr., Malcolm Davis, J. A. Fowler, D. E. McHenry.

October 13, 1945—952d Meeting.

President Thone in the chair; 80 persons present.

New member elected; Anselm Keefe.

The deaths of C. W. Gilmore and M. B. Waite were noted.

Informal communication: F. Thone, Exhibition of new biological publications.

Formal communications: J. W. Hess, Australian wildlife and scenes.

November 10, 1945—953d Meeting.

President Thone in the chair; 48 persons present.

New member elected: W. B. Davis.

Informal communication: F. Thone, Exhibition of new biological publications.

Formal communication: R. L. Sexton, Pribilof Islands—summer home of the fur seal.

December 8, 1945—954th Meeting.

President Thone in the chair; 60 persons present.

New members elected: Roger Conant, J. A. Ewan, S. M. Peel, F. E. Todd.

Formal communications: Symposium on News from pesticide frontiers: W. R. Kirner, New rodenticides and insect repellents; F. F. Davis, New weed killers and fungicides.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPECIES OF *Markea* FROM COLOMBIA.¹

C. V. MORTON.

The following new species of *Markea* (Solanaceae) is an interesting addition to a genus of plants still rather insufficiently known. It was collected by the University of California Botanical Garden third expedition to the Andes. I am indebted to Dr. T. H. Goodspeed for the privilege of studying the material.

Markea dimorpha Morton, sp. nov.

Liana, caulibus elongatis, vix ramosis, juventute leproso-pubescentibus, angulatis; folia dimorpha, pleraque alterna, distantia, lamina ovali, abrupte acuminata, basi obtusa vel rotundata, integra, utrinque glabra, altera apice ramulorum brevium fasciculata, lamina oblanceolata, gradatim acuminata, basi anguste cuneata; rhachis elongata, apice florifera, valde nodosa, pedicellis racemosis, apice incrassatis, leproso-pubescentibus; calycis lobi liberi, lanceolati, acuti, incurvi, crassi, leproso-pubescentes; corolla aurantiaca, tubo medio abrupte ampliato, externe dense pubescente, fauce non contracto, limbo subregulari, lobis parvis, imbricatis, integris; filamenta glabra; ovarium glabrum; bacca aurantiaca, calycem accrescentem aequans.

Liana; stems elongate, straight, up to 7.5 mm. in diameter, sparingly branched, scurfy-pubescent when young, glabrescent, angulate, the bark exfoliating; leaves dimorphic, on some branches alternate, distant, short-petiolate (4-8 mm.), the blades oval, 5-11 cm. long, 3.3-5.3 cm. broad, abruptly short-acuminate, obtuse to rounded at base, entire, chartaceous, green and glabrous on both sides, the primary veins 4-6 pairs; leaves on other branches fasciculate at the apex of short lateral branchlets 0.5-2 cm. long, the blades oblanceolate, 8-14 cm. long, 2.5-4.5 cm. broad, gradually acuminate, narrowly cuneate at base; rhachis 1-8 cm. long, solitary, sometimes once or twice furcate, 4-5 mm. thick, ebracteate, conspicuously nodose from the scars of fallen pedicels, floriferous at apex only; pedicels racemose, 10-12 mm. long, thick, enlarged near apex, scurfy-pubescent, much thickened in fruit; calyx lobes 5, valvate, free to base, spreading,

¹ Published by permission of the Secretary of the Smithsonian Institution.

lanceolate, equal, 6 mm. long, 2.2 mm. broad at base, acute, strongly incurved at apex, thick, scurfy-pubescent on both sides, venose, the veins numerous, longitudinal; corolla orange, erect in calyx, 15 mm. long, the tube 12 mm. long, 2 mm. broad at base, abruptly ampliate at middle, becoming 6-7 mm. broad, densely short-pubescent externally, glabrous within, not contracted in throat, the limb subregular, 10-12 mm. broad, the lobes imbricate in aestivation, spreading, ovate-deltoid to suborbicular, about 3 mm. long, undulate, entire; fertile stamens 5, the filaments inserted about 3.5 mm. above base of corolla tube, free, about 3 mm. long, glabrous; anthers oblong, 4 mm. long, 1.5 mm. broad, erect, acutish, introrse, the cells fully dehiscent longitudinally, confluent at apex; disk hypogynous, pentagonal, fleshy; ovary low and flat, glabrous, 2-celled; placentae axile, many-ovuled; style glabrous, 12 mm. long; stigma capitate; fruiting calyx accrescent, persistent, the lobes becoming 11 mm. long and 4.5 mm. broad; fruit an orange, fleshy, glabrous berry 10-12 mm. long, equaling or slightly surpassing the calyx.

Type in the U. S. National Herbarium, No. 1,833,445, collected north of Dabeiba, along road to Turbo, Department of Antioquia, Colombia, at 300 to 350 meters elevation, February 25 to March 1, 1942, by R. D. Metcalf and J. Cuatrecasas (No. 30198).

There is no described species with which *M. dimorpha* need be compared. It belongs to the group of species known as *Merinthopodium* Donn. Smith, which Mr. Standley and I reduced to *Markea* in the Flora of Costa Rica. This group is distinguished primarily by the elongate, thickened and nodose, probably perennial rhachis. In most species this rhachis is borne at the end of an elongate peduncle, which is wholly lacking in the present species. The flowers are the smallest of any species of *Markea*.

The present plant is noteworthy for its dimorphic leaves. In some specimens the leaves are alternate and distant, the blades being oval, abruptly acuminate at apex, and usually rounded at base. In others they are fascicled at the ends of short, spurlike branchlets, and are oblanceolate, gradually acuminate at apex, and narrowly cuneate at base. Both kinds of leaves are not found on the same twigs. I am unable to say whether or not they occur on the same plant. From the leaves alone one would hardly hesitate to say that two species were involved, but both kinds of twigs bear inflorescences which are indistinguishable. I have no doubt but that these forms are variants of a single species.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW PRONGHORN ANTELOPE FROM SONORA.

BY E. A. GOLDMAN.

Three somewhat isolated, finger-like southern extensions carry the general range of the pronghorn antelope as a species into Mexico. These peripheral extensions represent geographic races differing from the typical form and from one another only in comparatively slight details of size, color, and structure. The three are as follows: (1) *Antilocapra americana peninsularis* of central Baja California, distinguished by fairly large size, rather dark coloration, the males with relatively short, thick, rugose horns, and the skulls with prominent orbits in both sexes; (2) *Antilocapra americana mexicana* of the plains of northern Chihuahua, very similar to typical *Antilocapra americana americana* of South Dakota, but somewhat smaller and paler; and (3) a hitherto unrecognized race in the desert region of central western Sonora, described as follows:

***Antilocapra americana sonoriensis*, subsp. nov.**

SONORA PRONGHORN ANTELOPE.

Type locality.—Forty miles north of Costa Rica, a ranch on the northern side of the Rio de Sonora, southwest of Hermosillo, Sonora.

Type specimen.—Female adult, skin and skull; No. 250938, U. S. National Museum (Biological Surveys collection); collected by Vernon Bailey and Frederick Winthrop, December 11, 1932; original number, 11291.

Distribution.—Desert plains of central western Sonora and north to southern Arizona.

General characters.—Size smallest of the subspecies of *Antilocapra americana*. Similar in general to *Antilocapra americana mexicana* of northwestern Chihuahua, but smaller; color about the same; skull

smaller and differing in detail. Differs from *Antilocapra americana americana* of South Dakota, and *Antilocapra americana peninsularis* of central Baja California in smaller size and paler coloration; cranial characters also distinctive.

Color.—*Type* (fresh pelage): Upper parts in general near “cinnamon,” becoming “orange-cinnamon” faintly mixed with black in the mane along median line of neck; rump patch white as usual in the species; middle of face “pinkish cinnamon,” becoming thinly mixed with black across forehead, and varying to “pinkish buff” between the horns on top of head; nose and upper surface of muzzle brownish, changing abruptly to “pale pinkish buff” near lips; under parts, including narrow upward extensions on sides of neck in front of shoulders, white, interrupted by the usual “pinkish buff” areas on throat and across under side of neck; inner sides of fore limbs dull whitish near body, the outer sides “pinkish buff,” this color extending all around from knees to hoofs; hind limbs pinkish buff, except inner surfaces of thighs which are white like under parts in general, and a gradually narrowing whitish line extending down inner sides to near hoofs; ears pinkish buff, edged with black externally, clothed with whitish hairs internally; tail above pinkish buff to near tip, this color extending up a short distance on median line of rump, below white, including tip, which is white all around.

Skull.—Most closely resembling that of *mexicana*, but decidedly smaller; frontal depression shallower; premaxillae less extended posteriorly along median line; auditory bullae more flattened, less projecting below level of basioccipital. Differs from those of typical *americana* and *peninsularis* in about the same characters as from *mexicana*.

Measurements.—*Type*: Total length, 1420 mm.; tail vertebrae, 120; hind foot, 410. *Skull* (Type): Greatest length, 251.5; condylobasal length, 233.5; greatest width at posterior borders of orbits, 118.5; maxillary tooth row (alveoli), 67.2.

Remarks.—*Antilocapra americana sonoriensis* is based primarily on a single specimen, presenting characters apparently beyond the range of individual variation in *A. a. mexicana*, to which it is most obviously related. A skull of a female in the U. S. National Museum (No. 3691), collected many years ago at Fort Buchanan, now Crittenden, Arizona, shares some of the characters of the type of *sonoriensis*, and may be referred to the same form. On geographic grounds, however, specimens from southeastern Arizona may be expected to exhibit gradation toward *mexicana*.

Specimens examined.—Total number, 2, as follows:

Arizona: Fort Buchanan (now Crittenden), 1 (skull only).

Sonora; Costa Rica (40 miles north), 1 (type locality).

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW *GERRHONOTUS* LIZARD FROM UTAH.

BY ANGUS M. WOODBURY.

A specimen of *Gerrhonotus* taken in Kane County, extreme southern Utah, in August, 1933, not previously reported for lack of supporting specimens, is being described at this time in order to make the information available to other workers in the field. This appears to be the first specimen of the genus reported from Utah, and seems to be widely separated from other known races of the genus. I am indebted to Henry S. Fitch, Hobart M. Smith and Joe Tihen for advice and to T. L. Rodgers of the Museum of Vertebrate Zoology of Berkeley, California for the loan of comparative material.

The terminology used herein differs somewhat from that of Fitch (Amer. Mid. Nat., 1938:381-424) in his systematic account of the Alligator Lizards (*Gerrhonotus*). After consultation with Smith and Tihen and reference to other literature, I have adopted the following terms which are correlated with the Fitch terminology in the following table, most of which was worked out by Dr. Smith for use in his handbook:

<i>Woodbury</i>	<i>Fitch</i>
Supranasals.....	Anterior pair of internasals
Internasals.....	Posterior internasals
Frontonasal.....	Azygous prefrontal
Prefrontals.....	Prefrontals
Frontal.....	Frontoparietal
Frontoparietals.....	Anterior parietals
Interparietal.....	Interparietal
Parietals.....	Posterior parietals
Interoccipital.....	Interoccipital
Upper { postnasals.....	Anterior postnasals
Lower {	
Canthal { Posterior postnasals	
Loreal {	
Cantholoreal.....	Loreal
Supraoculars.....	Supraoculars
Medial row.....	Inner row
Lateral row.....	Outer row
Infralabials {	
Sublabials { 3 rows of infralabials	
Chinshields {	
Postmentals {	

***Gerrhonotus coeruleus utahensis* new subspecies.**

UTAH ALLIGATOR LIZARD.

Type.—Adult female, University of Utah, Museum of Zoology, No. 1676, taken in Sink Valley, south of Alton, about twenty miles north of Kanab, Kane County, Utah, about 6500 feet altitude, August, 1933 by Von Parkinson.

General Description.—Specimen in alcohol. Length of head, 20 mm.; neck, 15 mm.; snout to anus, 105 mm.; tail incomplete. Neck slightly constricted. Legs small and weak. Ear nearly concealed, opening posteriorly through a narrow slit into lateral fold, which begins just ventral to the angle of the mouth and extends backward to the hind leg, the base of which is enveloped at its end. The front leg base is also enveloped by the fold, which expands sufficiently at and behind the leg base to allow the upper arm to be almost enclosed when compressed closely against the side. This suggests the idea that it is an adaptation for burrowing and the idea is supported by the scalation of the head, especially that around the ears which are so nearly covered.

Scalation. There are 16 dorsal longitudinal scale rows on mid-body and 10 on the neck, all well keeled and 45 transverse rows on neck and body to a point dorsal to the posterior edge of the hind leg. Ventrally there are 57 scales from mental to preanals inclusive, arranged in transverse rows except in the gular region. On the abdomen, they are arranged in 12 longitudinal rows.

Head as shown in the drawings. Nasals are narrowly in contact with rostral. Two supranasals present, which adjoin behind the rostral to make the first postrostral pair. Behind these are a pair of internasals followed by a single large frontonasal, which is slightly azygous. Behind this single plate, lies a pair of prefrontals which are barely in contact at their corners, being almost separated by the anterior point of the frontal. This latter plate is slightly wider behind and is bordered posteriorly by a pair of frontoparietals which are in contact at their medial corners so that they completely separate the frontal from the interparietal. This latter plate bears a conspicuous pineal spot, is bordered laterally by the parietals and is adjoined behind by the interoccipital. The frontal is bordered laterally by the median row of supraoculars. The lateral row of supraoculars is enclosed between the medial row and the superciliaries.

A complete series of superciliaries (narrow) separates the eye from the supraoculars. A narrow series of 3 postoculars, 2 suboculars and a preocular completes the encirclement of the eye, except posteriorly where there is a narrow gap between the superciliaries and postoculars. The posterior subocular is wedge-shaped, wider behind. The preocular is large squarish and contains a conspicuous glandular space which narrows and extends backward between the suboculars and the eye. Supralabials 11-10; infralabials 10-10. Posterior two supralabials highly angular above. Underneath the head, a row of sublabials lies between the infralabials and the large chinshields. Behind the mental, the

postmentals are in contact as are the first pair of chinshields, but the succeeding two pairs are separated by smaller scales in the middle.

Coloration. Dark brown (15E6)¹ dorsally on head and most of neck, except tip of nose is lighter brown (15 F 5). Posteriorly, the body is a similar light brown but there are indications of about 13 incomplete brown (15 C 10) crossbands on the body, each about one scale wide extending nearly to the lateral folds and the series continues on to the tail. The first band lies directly over the bases of the front legs and the 13th over the hind legs. The ventral ground color is a very light brown (12F4), extending posteriorly from the chin. The dark brown pigment from the dorsal neck extends around the sides to suffuse with dark pigment the sides of the throat, which in turn are connected underneath by two faint bands. A similar faint pattern of dark pigment with indistinct outlines extends along the abdomen where it is plainer in the middle and faint or absent along the sides and absent on the preanal scales.

Diagnosis. Much lighter in color than other subspecies and has a much reduced color pattern. Little difference in general color of head and body, being much less than the difference exhibited in *G. c. shastensis*. The dark color of the abdomen lies mainly between scale rows but shows some dark pigment along the edges of both longitudinal and transverse rows as well as some diffusion of pigment in center of many scales. The white tips of dark scales on the sides are inconspicuous or missing as they are in some specimens of *G. c. principis*. No recognizable vertebral stripe is present.

All 16 dorsal scale rows well keeled; some scales on forearm and tibia well keeled; temporal scales not keeled; upper scales on side of tail behind leg keeled, weaker or absent on lower scales. The two frontoparietals are in contact thus definitely separating frontal and interparietal which are in contact in all the other specimens of other subspecies examined. Superciliary series complete. Supranasal plates form a pair behind rostral. Nasal narrowly in contact with rostral.

Discussion.—There is little doubt that this is a race of the species *Gerrhonotus coeruleus*, even though intermediate and intergrading material is not yet available. The 16 rows of dorsal keeled scales, the complete series of superciliaries, the azygous frontonasal plate and surrounding scales, the pair of supranasals behind the rostral, the frontal-parietal-occipital relations, the highly angular posterior supralabials, the sublabial-chinshield relationships and the general aspects of the color pattern all bespeak conspecific identity.

The geographic position and the detailed differences in color pattern, keeling and body proportions indicate sufficient distinction to warrant subspecific separation.

Comparisons. Nearer *G. C. shastensis* and *palmeri* than *G. c. coeruleus* and *principis*. Differs from *shastensis* in great reduction of color pattern and in number of white-tipped scales; less contrast between general

¹ All color determination from Maerz and Paul, Dictionary of Color.

color of head and body; difference in distribution of dark color of abdomen; in contact of the two frontoparietals instead of contact of frontal and interparietal.

Differs from *palmeri* in much lighter dorsal color which is slightly lighter than the head; noticeably smaller limbs and head; less distinct keeling on the sides of the tail; contact of the two frontoparietals instead of contact of frontal and interparietal; difference in distribution of dark color of abdomen and almost total lack of white-tipped scales on sides.

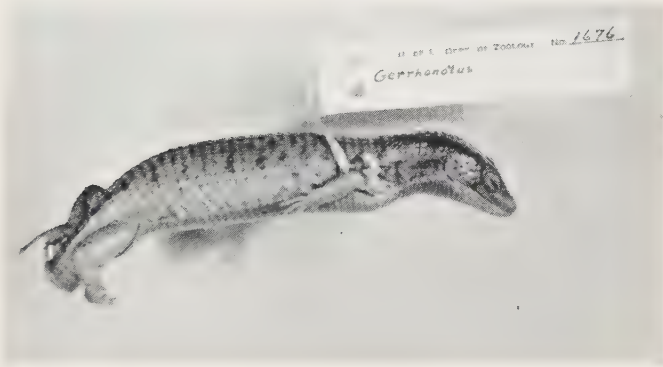


FIG. 1. Type specimen of *Gerrhonotus coeruleus utahensis*, Utah Alligator Lizard. Photo by W. P. Cottam.

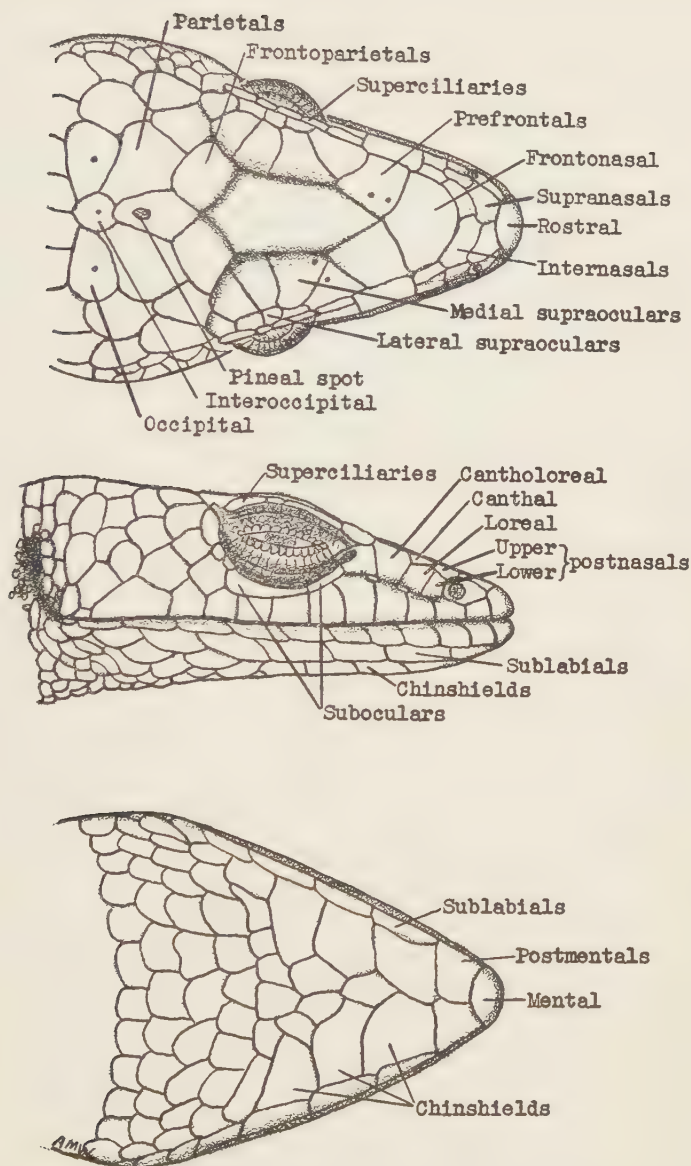


FIG. 2. Head scalation of *Gerrhonotus coeruleus utahensis*.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NOTES ON FISHES IN THE ZOOLOGICAL MUSEUM
OF STANFORD UNIVERSITY.

XIV.—A NEW GENUS AND THREE NEW SPECIES OF
GOBIES FROM THE PHILIPPINES.

ALBERT W. C. T. HERRE.

The extraordinary richness and bewildering variety of the goby fauna of the tropical Pacific continues to astonish the students of Philippines fishes. There are easily far more species of gobies than of any other group of marine fishes.

Among the most singular of gobies are those with vomerine teeth. These teeth, which are incisor-like, are always large and may be of relatively enormous size. They are placed transversely across the vomer, their inner edges often touching. In some species they are fused to form a gigantic chisel. Usually they are strikingly evident when the mouth is opened enough to enable one to see its roof plainly, but in some species the vomerine teeth are more or less hidden by a velum and are then very apt to be overlooked. No doubt numbers of species already known will be found to possess vomerine teeth too, when carefully examined for this character, while among those as yet undiscovered there will also be some with these singular teeth. Parallel evolution is strikingly displayed in the gobies and eleotrids in numerous cases, and this is also true of some of the gobies with palatal teeth. For example, the genus *Intonsagobius*, described in an earlier paper, is very near to *Callogobius* in most respects, and unless one examined the vomer he would call it a member of that genus. The new species here presented were obtained during my last trip to the Philippines in 1940-41. Lengths given are always of the standard length.

MINDOROGOBIOUS Herre, new genus.

Dorsal VI-I-10; anal I-9; scales ctenoid, 38-40 in longitudinal series; predorsal scales 14-16.

Head naked, with scarcely visible rows of sensory papillae on cheeks; eyes high up, very close together, in the anterior half of the head, mouth

terminal, jaws even, the small teeth in 3 rows in both jaws, with one or two pairs of posterior canines in the lower jaw; on the vomer is a pair of very large incisors, fused into a single chisel-like mass; the tongue is truncate, free, of moderate size. The dorsals are well separated, the second dorsal and anal not reaching the base of the pointed caudal, which is longer than the head; the pectorals and ventral are narrow and elongate. The gill openings are no wider than the pectoral base, the isthmus broad.

Type of the genus *Mindorogobius lopezi* Herre, new species.

KEY TO THE GENERA OF GOBIES WITH VOMERINE TEETH.

- A. Scales ctenoid, 40 or less.
 - B. Scales about 26; predorsal scales 6.
 - C. Scales covering head and body; no prominent ridges or rows of sensory papillae on head...1. *Macrodonlogobius*
One species from the Pelew Islands.
 - CC. Head naked, with many transverse and longitudinal ridges with sensory papillae; median lateral scales of trunk with vertical rows of sensory papillae.
 - 2. *Intonsagobius*
One species from Jolo, Sulu Islands, Philippine Islands.
 - BB. Scales 38 to 40; predorsal scales 14 to 16; head naked; mouth terminal, very little inclined; rows of sensory papillae scarcely evident; lower jaw with one or two pairs of recurved lateral canines.....3. *Mindorogobius*
One species from Mindoro, P. I.
- AA. Scales 40 or more, ctenoid or cycloid.
 - D. Scales more or less ctenoid, at least on the posterior half.
 - E. Scales 40 or 50, more or less cycloid on anterior half, those on posterior part enlarged; mouth nearly vertical, chin prominent; no conspicuous lines of sensory papillae on cheeks.....4. *Mangarinus*
One species from Mindoro, P. I.
 - EE. Scales 60 to 65, all ctenoid, or only those on posterior half; mouth moderately oblique, the jaws nearly or quite equal; head with many conspicuous lines sensory papillae.....5. *Mars*.....
One species from Samoa and two from the Philippines.
 - DD. Scales cycloid, more than 50.
 - F. Maxillary extended on preopercle, the lower jaw projecting; scales about 60; head, predorsal area, a strip back to second dorsal, and area below a diagonal from pectoral axil to anus all naked.
 - 6. *Myersina*
One species from Culion, P. I.
 - FF. Mouth moderately oblique, jaws equal, maxillary not prolonged backward; scales 70 to 85; naked back to first dorsal origin and ventral base; upper lip lined with a dense papillate fringe.....7. *Smilogobius*
Two Philippine species and two from Singapore.

Mindorogobius lopezi Herre, new species.

Dorsal VI-I-10; anal I-9; pectoral 17; longitudinal series of scales 38 to 40, and 14 in a transverse series.

The depth of the low elongate body is 6, the head 3.85, the long pointed caudal 3, the ventrals 5 times in the length; the elongate pointed pectoral equals the head and extends beyond a vertical to the ventral tip. The eyes are high up, dorso-lateral, 3.7 in the head, very close together, the interorbital breadth not more than a third of the eye; the snout is short, convex, 4.66 in the head; the mouth is terminal, nearly horizontal, the posterior angle of the maxillary beneath the anterior part of the eye, or the front margin of the pupil. The teeth are in 3 rows in both jaws, the outer row enlarged, the others very small, slender, and pointed; the teeth of the outer row of the lower jaw are much the stoutest and terminate laterally in one or two recurved canines on each side; the vomerine teeth are as given in the generic diagnosis.

The dorsals are well separated, the first dorsal spines with elongate tips, the first spine greatly elongated with filiform tip and equal to the head in length; the second dorsal and anal are rather low, not reaching the caudal when depressed, the second dorsal height one and three-fourths in the head, the anal height two and a third times. The least depth of the caudal peduncle is two and a third times in the head and one and two thirds times in its own length.

The color in alcohol is pale yellowish, much paler on the under side of the head and trunk, with two longitudinal brownish stripes; the upper one extends from above the opercle to the top of the caudal peduncle, the other from under the pectoral to the middle of the caudal base; two pairs of circular brown spots on top of the head, and vestiges of 8 or 9 short brown crossbars over the back; a nearly vertical brown band from below the middle of the eye across the cheek behind the mouth to the under side of the head; the dorsals and caudal more or less crossbarred by rows of brown spots; the outer half of the anal and the middle ventral rays are dusky; the pectoral is colorless.

The type, 27 mm. long, and two paratypes, 22 and 26 mm. in length were taken from a mangrove swamp at Hacienda Waterous, Mangarin, Mindoro.

Named for Gregorio Lopez, fisherman and linguist extraordinary, my field collector and companion for many years, who accompanied me to Mindoro on my last trip.

Vaimosa mindora Herre, new species.

Dorsal VI-I-7 or 8; anal I-7 or 8; pectoral 16; scales in lateral series 28 or 30; transverse 8; predorsal scales 14, the anterior one enlarged and lying between the posterior part of the eyes; opercular scales 6.

The type, a male 23 mm. long, has the depth 6.4, the head 3.7, the caudal 3.28 times in the length; the body is elongate, low, the dorsal and ventral profiles nearly horizontal and parallel, the head low and broad, the trunk compressed posteriorly, the fish wedge-shaped when viewed

from above. The eyes are rather large, 3.4 in the head, close together, the interorbital space 1.8 times in an eye diameter, the short snout 4.7 in the head. The slightly oblique mouth is terminal, the jaws even, the maxillary extending beneath the middle of the eye, its length 2.7 times in the head. The small, sharp-pointed teeth are in 3 rows in both jaws. The dorsals are well separated, with 4 scales between them, the first and third spines of the first dorsal elongate and threadlike, reaching the third or fourth ray of the second dorsal when depressed, and 3.28 times in the length. The second dorsal and anal are of equal height, not reaching the caudal when depressed, 1.55 times in the head or 5.75 times in the length; the short ventral equals the longest second dorsal and anal rays; the pointed pectoral is 4.6 times in the length and 1.24 times in the head. The color in alcohol is very pale yellowish, the scales on the upper half of the body more or less marked by short bars and spots of brown; sides and under part of head with 3 brown nearly vertical stripes; conspicuous circular brown or dusky dots on the posterior margin of the opercle, on the pectoral base, and in a patch on the side under the pectoral; a row of 5 or 6 small brown spots along the middle of the side, the last on the caudal base being the largest; a brown strip from the eye to the maxillary and another to the angle of the mouth; both dorsals with conspicuous crossbars of reddish brown dots; 5 or 6 similar bars of spots on the caudal; the anal and ventral are more or less dusky, the ventral base dotted with dusky.

A male paratype 20 mm. long agrees in every essential. A female paratype, 21 mm. long, is deeper, and has no elongated or threadlike dorsal spines. It agrees otherwise, except that it has retained its colors better so that the markings are better defined.

The 3 specimens were collected in a brackish swamp on Hacienda Waterous, Mangarin, Mindoro.

The combination of characters given above, 28-30 lateral scales, 14 predorsal and 6 opercular scales, with 7 or 8 anal and second dorsal rays the character of the mouth, and the distinctive head markings, separate this from other members of the genus.

***Herreolus philippinus* Herre, new species.**

Dorsal VI-I-18; anal I-17-18; pectoral 18.

The naked scaleless slender body is laterally compressed, the dorsal profile gently curved, the greatest depth at the dorsal origin, 5.7 times in the length; the head and caudal are equal, 4.8 times in the length; the large eye is contained 3 times in the head; the interorbital width equals the blunt snout, and is half or a little more than half the eye. The mouth is nearly vertical, its angle not extending beneath the eye; the small teeth are in a single row in both jaws; a pair of stout anterior canines behind them in the lower jaw.

The fins are all low, the dorsals well separated, the origin of the second dorsal in advance of the anus; the first dorsal does not reach the second when depressed, its height a third of the head; the second dorsal and

anal rays are twice in the head, their posterior rays not, or the last dorsal ray almost, reaching the caudal when depressed; one specimen has the second dorsal rays 2.5 times in the head. The broad pectoral is 1.4 to 1.25 times in the head or 6.8 to 6 times in the length; the pointed narrow ventrals are 1.66 times in the head or 8 times in the length. A low ridge or fold of skin extends forward from the first dorsal to a point above the hind margin of the preopercle.

In life this slender pale little fish is nearly translucent, with a conspicuous black spot on the caudal base. In alcohol the color is very pale yellow, with a black spot nearly as large as the eye on the caudal base; the upper half of the body is darkened by minute brown dots, which form a more or less definite band on the caudal peduncle before the caudal spot; a faint blackish and very fine line along the middle of the side; a brown subdorsal band from the head to the caudal peduncle, becoming darker on and covering the first dorsal and basal part of the second dorsal; the anal is more or less brown, or may be clear along the middle, with brown base and a black margin; the other fins are clear, or the caudal may be brownish.

Described from the type, a female 24 mm. long, 3 female paratypes 21 to 24 mm. long, and a male paratype 21 mm. long. They were collected under and between the logs of a raft in front of the sawmill at Santa Maria, Zamboanga Province, Mindanao.

KEY TO THE KNOWN SPECIES OF HERREOLUS.

- A. Second dorsal I-13-16; anal I-12-15; a broad black stripe from lower jaw and across eye to tip of caudal.....*H. formosus*
Distribution, Siam and Philippines.
- AA. Second dorsal I-18; anal I-17-18; a black spot nearly equal to eye on caudal peduncle.....*H. philippinus*

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A REVIEW OF THE GIANT ANTPITTA *GRALLARIA*
GIGANTEA.

BY ALEXANDER WETMORE.

The Giant Antpitta *Grallaria gigantea* Lawrence has been known as one of the rare birds of Ecuador, as comparatively few specimens have come to museums. Recent receipt of one from Dr. F. Carlos Lehmann V, taken in southern Colombia, has led to comparisons with the type in Washington and with a small series in New York through which it appears that the material available divides readily into three subspecies of which two are new to science. The details of my studies are summarized in the following review. Thanks are due to the authorities of the American Museum of Natural History for use of specimens in their collections.

Grallaria gigantea gigantea Lawrence.

Grallaria gigantea Lawrence, Ann. Lyc. Nat. Hist. New York, vol. 8, June, 1866, p. 345 ("Ecuador").

The specimen that served as Lawrence's type, U. S. Nat. Mus. No. 35,101, came to Baird with a small lot of skins from John Akhurst, a dealer in natural history material of Brooklyn with a letter dated November 25, 1864. It has only Ecuador as a locality and no other data. However, it seems probable that it came from the eastern slope of the Andes as the other skins received with it include *Gymnoderus foetidus* and *Archiplanus leucoramphus leucoramphus*, species found on the eastern slope that have not yet been recorded from western Ecuador. There is also one skin of *Grallaria rufula* which is darker above than the average, thus suggesting the form described as *Grallaria rufula saturata* by Domaniewski and Stolzmann from San Rafael on Volcán Tunguragua, on the eastern slope above the Río Pastaza, a race, however, that is not currently recognized.

The type *Grallaria gigantea* remained unique for years since Sclater¹

¹ Ibis, 1877, pp. 439-440.

had only this one bird available in his review of the genus in 1877. For a time the bird was mounted but was subsequently made into a skin. It is in excellent condition today with no indication of fading from exposure to light, since the reddish brown of the sides of the neck, where fully exposed, is even darker than that of the sides beneath the protection of the wings. The bird is fully adult, having no indication of the rufescent and black tips and bars found on back, wing coverts and rump in many individuals that seem to mark the plumage of the first year.

This specimen differs from all others seen, so that the characters of the typical form may be summarized as follows:

Below paler, the center of the breast and the abdomen being much lighter, becoming ivory yellow along the median line; above browner, back, wings and tail being bister; forehead and loreal space duller brown; brown area of pileum more definitely delimited posteriorly, and extending farther back past middle; under wing coverts heavily barred and spotted with fuscous; flanks much more heavily barred.

Measurements.—Type, sex not known, wing 142.2, tail 54.3, culmen from base 39.4, tarsus 69.8 mm.

Range.—Probably in the upper Lower Tropical and lower Upper Tropical Zones in eastern Ecuador.

Remarks.—The only other specimen recorded from the supposed range is a male taken by Dr. E. Festa at Pun on the Río Chingual, below Tulcán, a locality well down on the eastern slope.² The authors' remarks say nothing of the colors.

Grallaria gigantea hylodroma subsp. nov.

Characters.—Similar to *Grallaria gigantea gigantea* Lawrence, but much more deeply rufescent below, barring on the lower surface less heavy, being especially reduced, in some nearly absent, on the flanks; more olive above on back, wings, and tail; forehead and loreal area much brighter, more rufescent; primaries and secondaries margined heavily with russet.

Description.—Type, American Museum of Natural History, male adult, No. 124,426 from Gualea, 6000 feet elevation, Province of Pichincha, Ecuador, June 14, 1913, collected by Wm. B. Richardson. Forehead and loreal area between tawny and russet; crown and hindneck deep mouse gray, washed anteriorly with bone brown; feathers above and behind eye narrowly barred with russet, forming part of an indistinct ring; rest of dorsal surface olive brown; wing coverts with a slight margin of russet, the inner greater coverts with a narrow subterminal bar of dull black and a narrow tip of russet; outer webs of primaries russet, merging to tawny on the free margin; outer webs of secondaries with a narrow margin of tawny; back, scapulars and rump with a few feathers tipped with russet crossbarred narrowly with one or two narrow bands of dull black; rectrices very narrowly tipped with russet; sides of head, sides of

² See Salvadori and Festa, Boll. Mus. Zool. Anat. Comp. Roy. Univ. Torino, vol. 15, no. 362, Nov. 17, 1899, p. 33.

neck, upper breast, sides and flanks amber brown, becoming tawny on the throat, middle of the breast, abdomen and under tail coverts, the whole narrowly barred with sooty black, the barring heaviest on breast, becoming almost obsolete on flanks; center of throat of warm buff, the anterior feathers white basally, the whole forming an indistinct longitudinal line; chin russet; under wing coverts russet, with a few small, scattered spots of sooty black. Maxilla natal brown, becoming fuscous black on culmen; mandible honey yellow; tarsus and toes benzo brown (from dried skin).

Measurements.—Four males, wing 144.2–152.6 (148.3), tail 54.5–61.8 (57.0), culmen from base 38.7–40 (39.4), tarsus 66.3–70.6 (69.7)³ mm.

Female, 1 specimen, wing 147.3, tail 61.3, culmen from base 39 mm. (tarsus broken).

Type, male, wing 152.6, tail 61.8, culmen from base 38.7, tarsus 70.6 mm.

Range.—Recorded from Gualea, Pachijal and Cerro Castillo; probably confined to the western slope of the Andes of Ecuador in the Upper Tropical and upper Lower Tropical Zone.

Remarks.—The six specimens of this bird examined are so uniform in their differences from the type of *gigantea* as to leave no question concerning their distinctness in the characters outlined above. Except as noted under *Grallaria gigantea gigantea* published records of the Giant Antpitta appear to pertain mainly to the present subspecies. Menegaux⁴ listed a male taken by Dr. Rivet at Pachijal on the western slope, his excellent plate showing a bird that agrees in every way with the series here under discussion. Dubois⁵ records the species only from "Ecuador." his plate supposedly being taken from the specimen in the Museum in Brussels, which, according to Sclater⁶ was the second one known. Dubois' figure shows a bird that is evidently immature as shown by the rufescent and black bars on the wing, back and rump. It agrees with *hylodroma* in the deep rufescent color of the ventral surface, but differs from any specimen seen in the restriction of the black barring on the under surface.

Grallaria gigantea lehmanni subsp. nov.

Characters.—Similar to *Grallaria gigantea gigantea* but barring on the central area of the lower surface definitely heavier; dorsal surface olive brown.

Description.—Type, U. S. National Museum No. 376,732, sex not marked, from San Marcos, elevation 3000 m., Moscopán, Cauca, Colombia, collected November 7, 1941 by Dr. F. C. Lehmann V. Forehead tawny basally, with tips of olive-brown, becoming olive brown that extends back over pileum past posterior angle of eyes; back of pileum and upper hindneck rather dull neutral gray; lower hindneck, back, wings

³ 3 specimens.

⁴ Miss. Serv. Geogr. Armée Mes. Arc. Merid. Equat., pt. 9, 1911, pp. B 36–37, pl. 3.

⁵ Syn. Av., pt. 1, 1900, p. 171, pl. 4, fig. 1.

⁶ Cat. Birds Brit. Mus., vol. 15, 1890, p. 312.

and tail olive brown; part of wing coverts, and a few feathers on lower back tipped with tawny and barred subterminally with dull black; upper tail coverts tipped also with tawny, with subterminal barring dark to deep neutral gray; primaries edged narrowly externally with cinnamon-brown, this changing on the outermost to a narrow outer margin of ochraceous-tawny; lores tawny; rictal bristles black; sides of head and neck tawny, barred with dull black; center of throat and upper foreneck ivory yellow, barred with black; chin, foreneck (except for ivory yellow area), upper breast, sides and flanks ochraceous-tawny, heavily barred with black; center of breast and abdomen light ochraceous-buff heavily barred with black; under tail coverts ochraceous-tawny without bars or spots; under wing coverts tawny to ochraceous-tawny heavily barred and spotted with black. Maxilla dusky neutral gray; mandible benzo brown; tarsus benzo brown; toes fuscous (from dried skin).

Measurements.—Type, sex not known, wing 154.1, tail 60.7, culmen from base 38, tarsus 73 mm.

Range.—Known only from San Marcos, 3000 meters elevation, and Tijeras, 2300 meters, Moscopán, Cordillera Central, Cauca, southern Colombia.

Remarks.—From *Grallaria g. hylodroma* the type of this race differs in being decidedly less rufescent on the lower surface, with the dark bars much heavier, these being heavy and distinct on the flanks where they are weak or absent in the west Ecuadorian birds. The under wing coverts are heavily barred and spotted with black as in typical *gigantea*. The series of *hylodroma* is so uniform in maintaining these differences that I do not hesitate to describe *lehmanni*, even though only a single specimen is available. Dr. Lehmann writes me that in the Museo de Historia, Natural of the Universidad del Cauca, in Popayan there is a female taken March 8, 1944, at Tijeras in the same area as that where the type was obtained but at the slightly lower elevation of 2300 meters.

In one way *G. g. lehmanni* seems to indicate variation or change in coloration in the direction of *Grallaria excelsa excelsa* Berlepsch from the Mérida region in western Venezuela. The two species *gigantea* and *excelsa* are similar in bulk and in length of wing, *excelsa* differing in having the bill, tarsus and foot much more slender. These differences to date are definite but it is possible that the two may intergrade in the intervening area from which no antpitta of this style is yet known.

This new form is named for the collector Dr. F. Carlos Lehmann V., in recognition of his studies on the ornithology of Colombia.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW GENUS AND SPECIES OF SQUIDS FROM THE
PHILIPPINES.

HARALD A. REHDER.¹

*Associate Curator, Division of Mollusks,
United States National Museum.*

While Smithsonian representative on the U. S. Bureau of Fisheries steamer *Albatross* during the Philippine Expedition in 1907 to 1909, Dr. Paul Bartsch collected numerous examples of an interesting squid in Jolo Harbor, Jolo, in the Sulu Archipelago. An examination of this form shows that it represents a new genus which is here described.

Order Decapoda
Suborder Teuthoidea
Family Loliginidae

UROTEUTHIS,² new genus.

Body cylindrical, slender, gradually tapering posteriorly to an attenuated tail-like portion beyond the transversely rhomboidal fins. Mantle articulating with the neck by three sets of cartilages as in *Loligo*, except that the lateral cartilages are more narrow and regular. Pen narrow, lanceolate, three-ridged, gradually narrowing posteriorly to a point, which is concave through the edges being pinched together.

Head, arms, and tentacles comparatively short and small. Eyes of medium size, covered by a transparent skin, and with a pore anterior to and slightly ventral of the eyes. Olfactory crests projecting behind each eye in the shape of a short scoop. Siphon rather broad, ventrally flattened, situated in a deep groove on the head, and furnished with an internal valve.

Arms with two rows of suckers, right ventral arm of males hectocotylized. Tentacular clubs with four rows of suckers. Buccal membrane with seven protuberances furnished with suckers.

¹ Published by permission of the Secretary of the Smithsonian Institution.

² Greek *οὐπα* = tail + *τεuthis* = squid.

Sexes showing dimorphism, the females being smaller, with shorter and less acute "tails," and without the slender ventral ridge in the mantle.

Genotype: *Uroteuthis bartschi*, new species.

This group resembles *Alloteuthis* (Naef) Wülker 1920 in having the mantle prolonged beyond the fins, but in that genus the buccal membrane lacks any prominent processes and is without suckers, the pen is broadened in the middle portion and involute for quite a distance posteriorly, and the fins are more heart-shaped. *Uroteuthis* agrees with *Loligo* in the presence of projections and suckers on the buccal membrane. It differs from both *Alloteuthis* and *Loligo* in the mantle being longer and more slender, and the arms and tentacles shorter.

UROTEUTHIS BARTSCHI, new species.

Figs 1-3.

Animal of moderate size, body firm, elongate, rather slender, cylindrical, tapering gradually posteriorly to a slender tail-like point beyond the rhomboidal pair of fins. This portion constitutes in the male animals one-fifth of the total mantle length; in the females, one-sixth. A fine raised ridge runs down the mantle in the center of the ventral surface of males, being absent in the females. The color of the body is a seashell pink on the ventral surface, becoming slightly darker dorsally. Along the center of the dorsal area is a narrow, elongate-ovate area of clustered small ovate spots of purplish color. This area, which stretches from the edge of the mantle to the center of the fins, is broadest, and the spots darkest and crowded closest together, a short distance anterior to the beginning of the fins. Around the periphery of this area the spots become lighter and more widely separated, and posterior to the center of the fins, they are smaller and fainter, often appearing like tiny specks or streaks.

The mantle articulates with the neck by three sets of cartilages. Dorsally an elongate dumbbell-shaped cartilaginous ridge about 15 mm. long, fits into a groove of the anterior portion of the pen, the end of which supports a pointed projection of the mantle edge. In each ventrolateral region a slender cartilaginous ridge about 13 mm. long, on the inside of the mantle, fits into an elongate-ovate concavity on the neck which has a raised cartilaginous edge around the anterior portion, which is narrowed at the end and slightly flexed ventrally. This broad groove is much shorter than the corresponding ridge on the mantle, being about 6 mm. long, and apparently the ridges slide along these grooves as the animal moves the head in and out of the mantle. The mantle edge is broadly acuminate in the region of these ridges.

The head region is comparatively rather small, and has a dark cluster of the color spots between each eye and the dorsal projection of the mantle. Over the rest of the dorsal region of the head and arms the spots are fainter and less crowded. The eyes are of medium size, covered by a transparent skin, which is pierced by a pore at the anterior rim of the eye.

The nuchal crests below each eye are in the form of a broad short scoop, slightly narrower at the edge, projecting from the head into the mantle cavity.

The siphon is rather broad and is ventrally flattened with a rounded depression on that surface at the height of the mantle edge. A tongue-like valvular flap protrudes from the transversely narrow opening. The siphon lies in a broad, moderately deep depression of the neck.

The arms and tentacles are comparatively short. In the males the arms are successively longer from the dorsal to the ventral pair, while in the females the ventral pair is about as long as or slightly longer than the second pair but shorter than the third pair. The second and fourth (ventral) pairs of arms are roughly trapezoidal in cross-section at base of arms, while the dorsal and third pair are more compressed with a keel on the outer side. All pairs have more or less thin marginal membranes. The suckers on all arms are in two regular rows, being largest on the second and third arms, slightly smaller on the dorsal arms, and considerably smaller on the ventral ones. The pedicellate suckers have a strong fleshy margin and the horny ring is brownish, with the teeth largest on the outer side.

The left ventral arm in the males is hectocotylized by a transformation of the suckers, commencing slightly beyond the middle of the arm. Here the pedicels increase in size and the sucker cups diminish in size and soon disappear, leaving fleshy fingerlike projections, which gradually diminish in size towards the tip.

The tentacular arms are compressed-ovate in cross-section, and on the outer edge bear a thin membranous keel which commences approximately a fifth of the way from the base; slightly beyond the beginning of the club it becomes wider and lies folded against the side. The club is margined on either side by a thin, wavy, scalloped membrane. At the proximal end of the club are two rows of suckers, but very soon a row of suckers appears on each side of these rows so that there are four rows of suckers at the broadest portion where they appear to be irregularly arranged because of their crowded nature. Distally the suckers become smaller and appear to be more regular in arrangement. The horny ring is lighter in color than in the suckers of the arms, and the large teeth appear to be more numerous.

The outer buccal membrane is moderately prominent and has seven triangular projections, which bear about seven or eight pedicellated suckers, with denticulated horny rings.

The mandibles are typical, the exposed portion being blackish brown in color. The radula is like that in *Loligo*; the formula is 2:1:1:1:2, the median tooth with a prominent mesocone and two smaller ectocones, while the laterals have a mesocone and a slightly smaller outer ectocone; the marginals are simple.

The pen is long and slender with no prominent expansion anywhere, and of a pale yellowish-brown transparent color, the anterior portion somewhat paler than the posterior part. A strong central rib of a darker, horny color runs the length of the pen. A short distance below

TABLE OF MEASUREMENTS (IN MM.)	MALES				FEMALES		
	TYPE	LARGEST	SMALLEST	AVERAGE ¹	LARGEST	SMALLEST	AVERAGE
Length of mantle (along ventral line)	199	223	181	199.9	131	120	124.3
Length of body to base of ventral arms. . .	208	234	188.5	209.4	140	130	132.9
Total length (to tip of tentacular arms) .	237	269	217	240.6	172	172	162.4
Length of fin	78	88	73.5	79.1	53	43.5	46.8
Length of "tail"	40	47	34.5	40.7	18.5	20.5	19.8
Ratio of tail length to mantle length	20	21	19	20.25	14	17	15.8
Width of body	15	15.5	14	14.8	14.5	14	14.25
Width across fins	43	43	42	41.6	32.5	33	32.75
Width of head	14	14.5	13	13.75	13.5	13.7	13.1
Length of dorsal arm	18.5	18.5	16	17.9	15	17	14.8
Length of second arm	23	25	22	22.7	22	23	20.2
Length of third arm	26	27.5	25	25.3	23.5	23	21.3
Length of ventral arm	27.5	29	25	27.7	22	23	20.3
Length of tentacular arm	29	35	28.5	31.2	32	42	29.5

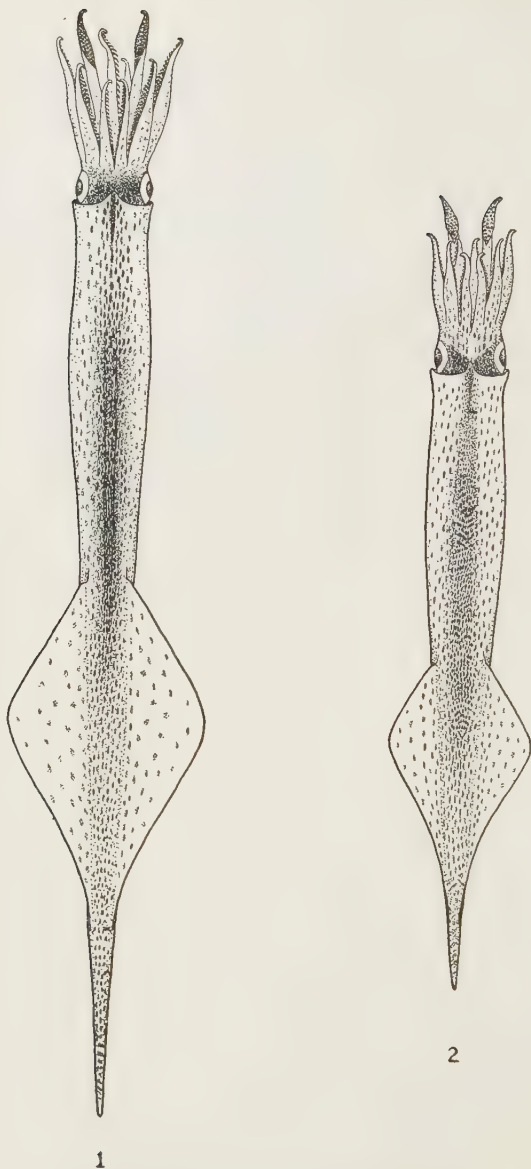
¹ This average includes all male specimens including the type, except one immature specimen.

the anterior end a marginal rib appears on each side, also of a darker color. About 38 mm. below the anterior end the pen broadens slightly, forming a marginal border on the outside of the lateral ribs. The edge of these borders also becomes thickened and darker, while the lateral ribs gradually become paler and more obscure. Towards the posterior end the pen narrows to a fine point, with the margins pinched together ventrally to form a narrow troughlike concavity.

The type, a male, is U.S.N.M. No. 573515 and is figured in this paper. One female, U.S.N.M. No. 573512 also is figured here. Sixteen other male specimens, U.S.N.M. No. 573513, and 5 females, U.S.N.M. No. 573514, were collected simultaneously. The measurements for these specimens are presented in tabular form.

All these specimens were collected on the night of February 8, 1908, in Jolo Harbor, Jolo, Philippine Islands. They were gathered at the gang plank of the U. S. *Albatross* by means of a submarine light and dip net. For a vivid description of the capture of these graceful and elusive creatures, see Paul Bartsch: *Pirates of the Deep. Stories of Squid and Octopus* (Ann. Rep. Smithsonian Inst. 1916, pp. 362-363. 1917).

Attention may again be drawn briefly at this time to the sexual dimorphism apparent in the table of measurements above. The females are shorter, with a small, somewhat stumpier tail, and without the slender ventral ridge along the mantle; the ventral arms are shorter, instead of longer, than the third pair of arms.



1

2

EXPLANATION OF FIGURES

FIG. 1. *Uroteuthis bartschi*, new species; male. 2. *Uroteuthis bartschi*, new species; female.

(Drawn by Mrs. Aime M. Awl)

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

A TRICARPELLARY MAPLE.

WILLIAM A. DAYTON.¹

Sometime in October, 1944, Capt. Howard S. Rappleye, of the U. S. Coast and Geodetic Survey and Treasurer of the Washington Academy of Sciences, informed me that, in the Takoma Park section of the District, where he resides, is a maple tree with its fruits often in 3's instead of pairs. Following Capt. Rappleye's directions, I visited on October 18th the intersection of Laurel and Walnut Streets where I saw the tree to which Capt. Rappleye undoubtedly referred, and from which the material was collected on which the accompanying drawing (Fig. 1) is based. The tree is a Planetree or Sycamore Maple (*Acer pseudoplatanus* L.), the species with which the south side of Walnut Street is planted. At this season of the year much of the fruit had fallen and probably some of the trees are male, but there was evidence that other trees in this row sometimes had fruit in 3's. The corner tree, near Laurel St., seemed to have the majority of its fruits in threes. As far as I have been able to ascertain, tricarpellary fruits in maples are not on record. While the condition here mentioned is doubtless "freakish" it presumably has some genetic significance and seems worthy of record.

¹Chief, Div. of Dendrology and Range Forage Investigations, U. S. Forest Service, Washington, D. C.



Fig. 1. Planetree or Sycamore Maple (*Acer pseudoplatanus* L.). Drawing by Miss Leta S. Hughey of the U. S. Forest Service from material collected by W. A. Dayton October 18, 1944, on Walnut St., near intersection of Laurel St., Takoma Park, D. C. Apparently more than half of the fruits on this tree were in threes. Note fuzziness of lower leaf surfaces, reticulated nutlets (some of which had a few short hairs) and the rather narrow angle of the keys.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SOUTH AMERICAN *LEPTOTYPHLOPS*.

BY HOBART M. SMITH AND LEONARD E. LAUFE.

Through the courtesy of Dr. Doris Cochran in providing material for anatomical study, a specimen has come to hand of a species of *Leptotyphlops* hitherto unannounced. Dr. Dunn has examined our description and verifies the distinctness of the species from the forms he recently described, and from others of the Panamá-Colombia area. We name the new form

Leptotyphlops striatula sp. nov.

Type.—U. S. Nat. Mus. No. 98889, collected at Yamachi, in the Southern Yungas, Bolivia, by M. Cárdenas.

Diagnosis.—A member of the *albifrons* section of the genus, having large supraoculars, a normal snout, two supralabials, a lined pattern, a yellowish snout and tail-tip, a total length/tail ratio of 12.7, and a total length/diameter ratio of 41.6. Related to *rufidorsum* and *tenella*, having the supraoculars enlarged more than is usual in the *albifrons* section, and narrowly separated from the 1st supralabials. Differs from these by having 12 scale rows around the tail, 249 dorsal scales, 23 subcaudals, and every scale row with a very distinct, broad median dark stripe.

Description.—Head somewhat flattened. Snout projecting far beyond lower jaw; snout rounded in lateral and dorsal profile. Portion of rostra, visible from above about $1/5$ longer than broad (by measurement; to the eye it appears proportionally longer), strongly tapered a short distance back of snout, sides elsewhere only slightly convergent. Posterior tip of rostral extending very slightly posterior to anterior borders of eyes and narrowly in contact with prefrontal. Latter longer than any other dorsal scale of head or neck, very slightly broader than long. Frontal as broad but only about half as long as prefrontal. Interparietal and interoccipital successively longer and broader than the preceding scale. First nuchal equally as broad as interparietal, but a little shorter. Nasal completely divided, the suture passing diagonally upward through the naris from the posterior to the anterior margin of the scale. Lower borders of naris and eye about on a level with each other. Supraoculars

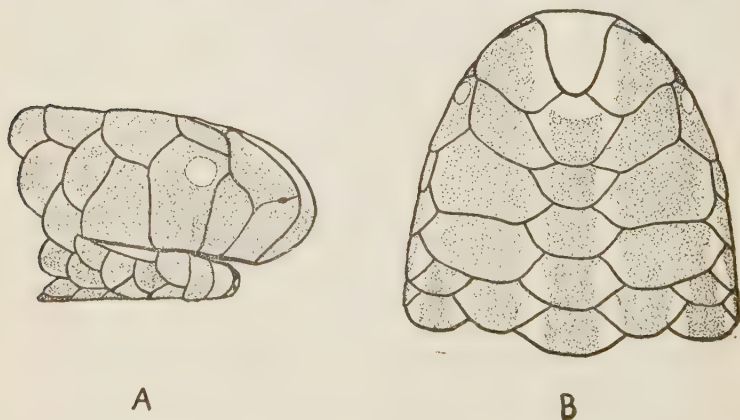
twice as broad (maximum, diagonal) as long (diagonal), narrowly separated from 1st supralabial. Parietal slightly smaller than upper portion of nasal, longer than succeeding occipital, extending laterally nearly to lower margin of orbit. Occipital extending as far laterally as parietal, but not so long as that scale. Sides of rostral divergent toward lip. First supralabial narrow, anterior and posterior borders nearly parallel; upper edge even with middle of eye and with upper edge of nostril. Ocular large, bordering lip, second in size only to rostral of the head scales; eye near anterior border of ocular; suture of ocular and nasal $3/5$ that between 1st supralabial and upper section of nasal. Second supralabial subtriangular, almost as long as parietal, length nearly equal to width (height). Temporal about the size of interparietal. Lip bordered successively from anterior to posterior by nasal, 1st supralabial, ocular and 2nd supralabial, the labial borders increasing in size in the same order.

Mental very short but broad; 4 infralabials, the anterior 3 subequal in size, the posterior extremely large and concealed when mouth is closed, the first separated from its mate by a single scale.

Head scales, above and below, with many sensory pits, which are more numerous on the anterior scales, and larger on the ventral surfaces; on the ventral surface of the rostral they are almost in contact with each other.

Scale rows 14, reducing to 12 at the extreme base of tail; tail with 12 scale rows to very near tip. Dorsal scales 249 from rostral to caudal spine; caudal spine short, pointed, conical. Subcaudals 23. Total length 241 mm.; tail 19 mm.; diameter of body 5.8 mm.

A broad, very dark brown band following the middle of each scale row, occupying most of the width of each; a narrow light brown line following the edges of adjacent scale rows. The dorsal and ventral



A. *Leptotyphlops striatula*, type; lateral view of head. B. Same, dorsal view of head.

surfaces are almost exactly alike, except that the dark stripes are slightly lighter on the belly than on the dorsal surface. The chin is light. A large yellowish or light tan spot on tip of snout, occupying all the dorsal surface of the rostral and part of the adjacent nasals, and united with the paravertebral light stripes. The entire tip of the tail, including some two scale rows back of the terminal spine, is light also, like the snout.

Comparisons.—This species is most clearly distinguishable from others of the *albifrons* group by the possession of 12 instead of 10 scale rows about the tail. No other species of the group has been recorded with a like number. Unusual also is the high number of subcaudals, exceeded only by *columbi*, a species otherwise markedly different. In dorsal count, body proportions and relation of the first supralabial and supraocular *striatula* resembles to some extent *rufidorsum* and *tenella*, although the supraocular does not extend quite so near the 1st supralabial as in either of these latter species. The last 3 species mentioned may well form a natural subgroup; each occupies an area distinct, so far as now known, from that inhabited by any of the others, viz.: *tenella* in British Guiana, *rufidorsum* in Peru, and *striatula* in Bolivia. There is a uniform north-south trend in supraocular-supralabial relation (greater degree of separation toward the south), but in dorsal scale count, pattern and other characters there is little or no evidence of any geographic gradients.



Fig. A. *Leptotyphlops striatula*, type; dorsal view. Fig. B. Same, ventral view.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

ON SOME MILLIPEDS FROM SAIPAN.

BY RALPH V. CHAMBERLIN.

The small collection of millipeds considered in the present paper was made by my former student, Nathan W. Riser. All were taken north of Magicienne Bay on Saipan during August, 1944. The types are at present retained in the author's collection.

Orthomorpha coarctata (Saussure).

Three specimens of this tropicopolitan species are in the collection.

Opisthoporodesmus obtectus Silvestri.

One female tentatively referred to this species which was previously known from Tamara Id., near New Guinea, and Celebes. The male may possibly exhibit some differences.

Prosopodesmus jacobsoni Silvestri.

One female conforming as far as it goes with this species which was reported originally from Java.

Phagostrophus riseri, new species.

The general color is fuscous or black with an annulus about the caudal border of each typical segment yellow to light ferruginous. Collum dark excepting for a narrow light band over the anterior border and one over the posterior border which extends forward at the middle in a triangular or deltoid form. Head typically dark, usually with a lighter shield-shaped area in the frontal region and tending to be lighter down the sides. Antennae also lighter and the legs typically yellowish. Last tergite dark excepting a narrow caudal border of yellow. Anal valves mostly dark, commonly paler ventrally.

Head in general smooth; clypeal setigerous foveolae 2-2, the outer one on each side submarginal in position. The median sulcus across vertex lightly impressed. Eyes much more than their diameter apart. Antennae when stretched straight caudad not reaching the caudal margin

of the collum; second and sixth articles longest, the third, fourth, and fifth nearly equal to each other.

Collum much narrowed down each side, the lower end of the form shown in Pl. VI, fig. 5 and 6.

Segments moderately depressed in a shallow encircling furrow; segmental sulcus distinct on sides but weak or indistinguishable above, slightly angled above level of pore which is in front of and a little separated from it.

Anal tergite convexly rounded behind, not surpassing the anal valves which at middle extend caudad beyond it with mesal borders compressed and elevated.

Legs without tarsal pads. In the male the coxae of third to sixth pairs of legs with triangular processes compressed in the antero-caudal direction and with pointed apex directed ventrad; these processes decreasing in size from third to sixth pair. (See fig. 2.)

Number of segments, 44-48.

Length, near 35 mm. Diameter of male, 2.8 mm.; of female, 3 mm. Two males and two females.

Genus SAIPANELLA, new.

Differing from genera of Cambalopsidae previously known from the Asiatic and East Indian region in having the repugnatorial pores begin on the sixth instead of the fifth somite and also in wholly lacking tubercles and keels on the tergites. Without a neck-like constriction back of the head. Ordinary somites moderately furrowed or constricted about the middle. Eyes present, well-developed, with ocelli multiseriate. Clypeal foveolae 4-4. Antennae filiform, not clavate. Mentum entire, anteriorly separating the lamellae linguales. Anterior legs of male all with normal claws, not reduced or otherwise specially modified.

Saipanella marianna, new species.

Excepting in having the mentum entire (double) this genus seems more closely related to some members of the Cambalidae than to others in the Cambalopsidae than to others in the Cambalopsidae. Dorsum dark; Cambalopsidae. Dorsum dark; the body below level of pores becoming paler down sides and on ventral surface; a series of black spots over repugnatorial glands along each side; legs and antennae light brown.

Ocelli typically in five vertical series; e.g., 7, 8, 7, 6, 4; eyes separated by fully twice their diameter. Antennae short, subfiliform, the distal articles scarcely thicker than the proximal ones; second and sixth articles longest, the fourth shortest with the third and fifth about equal to each other. Antennae fitting into a pronounced excavation on each side. Gnathochilarium as shown in Pl. VII, fig. 2.

The collum in both sexes of form shown in fig. 1; the end portion on each side projecting ventrad as a free wing; the second and third tergites also similarly but less produced ventrad; finely margined below and up anterior border to level of eye, otherwise smooth.

Repugnatorial pore of a typical segment located on the metagonite somewhat less than half way from the segmental furrow to caudal margin; strongly striate below and up the side to a little below the pore, the striae running across both prozonite and metazonite. Above level of these striae the prozonite characteristically marked with numerous horseshoe-shaped impressions which are open caudad.

Anal tergite rounded behind, not at all produced and not exceeding the valves. Anal valves not compressed, meeting evenly at the middle line, not there forming a furrow.

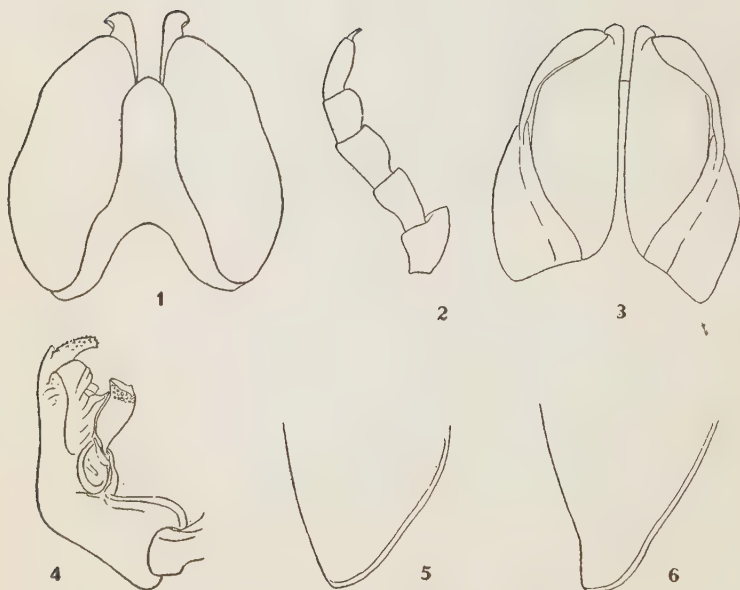
Gonopods of male partly exposed when in situ as shown in fig. 3. Details of structure as shown in figs 4 and 5.

Number of segments, 39.41.

Length, 23 mm; diameter, 2 mm. Two males and three females.

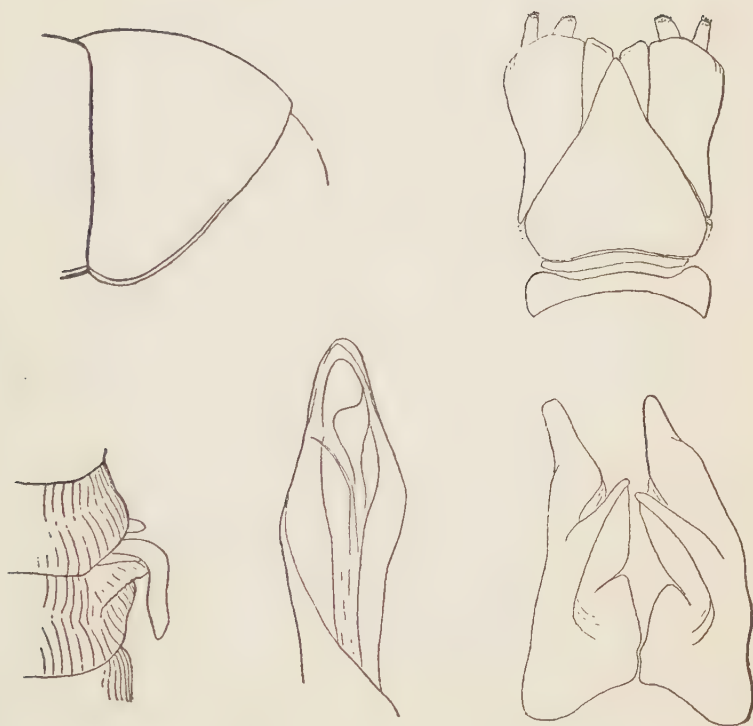
Rhinotus sp.

One female which it seems best not to attempt to place specifically until the male is known.



Phagostrophus riseri, new species.

- Fig. 1. Anterior gonopods, cephalic aspect.
- Fig. 2. Third leg of male, showing coxal prominence.
- Fig. 3. Anterior gonopods, caudal aspect.
- Fig. 4. Right posterior gonopod, caudal view.
- Fig. 5. Lower part of collum of male in outline, lateral view.
- Fig. 6. The same of female.



Saipanella marianna, new species.

- Fig. 1. Collum of male in outline, lateral view.
 Fig. 2. Gnathochilarium.
 Fig. 3. Right anterior gonopod in situ, lateral view, the adjacent legs omitted.
 Fig. 4. Telopodite of right anterior gonopod, ventral view, with posterior gonopod shown in situ against it.
 Fig. 5. Anterior gonopods, anterior view.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE IDENTITY OF *DESMOGNATHUS PHOCA*
(MATTHES) AND OF *DESMOGNATHUS MONTICOLA*
DUNN.

BY ARNOLD B. GROBMAN,
Biological Laboratories, University of Rochester.

The completion of a study on *Desmognathus*, which I had previously mentioned (1944:265), being indefinitely postponed, it has been deemed desirable to present specific (or species group) accounts whenever these could be organized. Of the forms in this genus at least one, it appears to me, requires a nomenclatorial change.

The salamander referred to by the Check List (Stejneger and Barbour, 1943: 15) and by Dr. Bishop's Handbook (1943:206) as *Desmognathus phoca* (Matthes) was actually first described by Dunn (1916: 73) as *Desmognathus monticola* which name was later synonymized by him (1923: 39) with *Salamandra phoca* Matthes at a time when the present distributional data were not available.

Matthes' type specimen is not known to exist (Dunn, 1926: 73). More recent information is contained in a letter (October 21, 1944) from Dr. Dunn concerning the present point, "When I was in Vienna in 1929, I ran into a Matthes' salamander, an *Ambystoma texanum*, probably one of his two cotypes; but no others."

In the original description of *phoca* (Matthes, 1855: 273) the account of the teeth, "Zähne bestehen aus einer vordern Querreihe und einer Längsgruppe", applies equally well to adult females of both *Desmognathus f. fuscus* and *Desmognathus monticola*, to the majority of the adult *monticola* males, and to a few adult *fuscus* males.

The pattern, as described by Matthes, is duplicated in many individuals of both *monticola* and *fuscus*.

The measurements given in the original description (total length approximately 110 mm.) would fit adults of both *monticola* and *fuscus*.

The remainder of the characters mentioned by Matthes are apparently of generic or more inclusive rank and are consequently applicable to both species mentioned above.

Since the type specimen is not available and the original description is inadequate for a definite allocation of names, the location of the type locality is here a matter of prime importance. Fortunately it was very accurately given by Matthes in these words: "... unter einem kleinen flachen Stein dicht neben dem Taylors-Creeck in Kentucky unweit New-Port." The Miami River flows southward through Hamilton County, Ohio, to empty into the Ohio River. One of the former's westward-flowing tributaries near its mouth is Taylor's Creek. The topographic map of the region shows a settlement, near the juncture of the creek and the river, called Taylor's Creek, which is opposite the town of Miami on the western banks of the Miami River. This area, which is about fourteen miles northwest of Newport, Campbell County, Kentucky, undoubtedly represents the type locality of *phoca*.

Thus, *phoca*'s type locality, represented on the accompanying map by a solid triangle, is more than 100 miles from the nearest *monticola* localities (represented by circles on the map. Solid circles represent specimens examined; hollow circles, literature records.) Ralph Dury and others from the Cincinnati region have collected actively in the general vicinity of the type locality of *phoca* and have been unable to find any specimens they would identify as the form being considered here.

Of the three major physiographic divisions in eastern United States, only certain provinces of the Appalachian Highlands harbor *monticola*. The form is not known from the Atlantic Coastal Plain (cf. below) to the east and south and only questionably from the Interior Plains (cf. below) to the west. The type locality of *phoca*, however, is in the Interior Plains. The dashed line on the accompanying map approximates the division between the Appalachian Highlands and the Interior Plains.

For the following reasons, therefore, it seems best to the present writer to consider *Salamandra phoca* Matthes a synonym of *Desmognathus fuscus* (Rafinesque) and to regard *Desmognathus monticola* Dunn as the valid name for the salamander currently recognized under the name *Desmognathus phoca* (Matthes):

1. The type specimen is lost.
2. The original description of *phoca* applies equally well to *fuscus* and to *monticola*.
3. In the vicinity of the type locality subsequent collections have revealed *fuscus* to the exclusion of *monticola*.
4. The nearest known *monticola* records are 100 miles to the east of the type locality of *phoca*.
5. The type locality is in a different major physiographic division from that in which *monticola* appears to be restricted.

It may be pertinent, at this point, to discuss two outlying records (represented on the accompanying map by hollow triangles) whose validity requires consideration. Hibbard (1936:279), in writing of *phoca* in Edmonson County, Kentucky, stated, "Common around springs and rocky streams. This species has been confused with *D. f. fuscus* in this area." Dunn had previously (1926:80) listed a specimen (Museum of

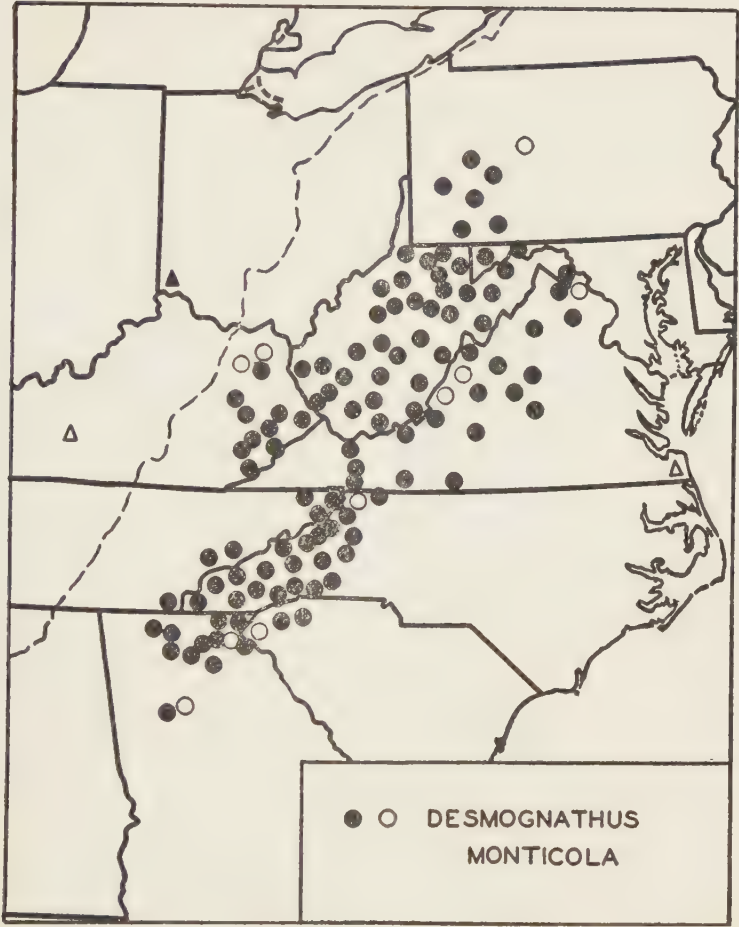
Comparative Zoology No. 2230) from this area, also. The weight of these reports from independent authorities would seem to readily negative any assumption concerning the validity of the records. However the distance between Edmonson County and the records in eastern Kentucky, from which no *monticola* are known, is great. It is desirable to have specimens from the intervening area or, lacking this, to have a reasonable explanation for this unusual distribution before considering our knowledge of the range of this form essentially accurate.

The Atlantic Coastal Plain record of Scharlinski (1939: 57), from Norfolk County, Virginia, requires less comment. Either the material was misidentified or the locality was that of shipment rather than of collection. Without doubt, *monticola* does not occur naturally in Norfolk County, Virginia.

ANNOTATED LITERATURE LIST.

- BISHOP, SHERMAN C. 1928. Notes on some amphibians and reptiles from the southeastern states, with a description of a new salamander from North Carolina. Journ. Elisha Mitchell Sci. Soc. 43(3.4): 165. Habersham County, Georgia.
- 1943. Handbook of salamanders. Comstock Publ. Co., Ithaca, N. Y.: 206.
- BRADY, MAURICE K. 1924. Eggs of *Desmognathus phoca* (Matthes). Copeia, No. 127: 29. Loudoun County, Virginia.
- BREDER, CHARLES M. and RUTH B. 1923. A list of fishes, amphibians, and reptiles collected in Ashe County, North Carolina. Zoologica, 4(1): 17. Ashe County, North Carolina.
- BRIMLEY, C. S. 1939. The amphibians and reptiles of North Carolina. Carolina Tips, Elon College, N. C., 2(7): 26. Oconee County, South Carolina.
- DUNN, EMMETT R. 1916. Two new salamanders of the genus *Desmognathus*. Proc. Biol. Soc. Wash., 29: 73. Original description of *monticola*.
- 1923. *Mutanda herpetologica*. Proc. New England Zool. Club, 8: 39. *D. monticola* placed in the synonymy of *phoca*.
- 1926. The salamanders of the family Plethodontidae. Smith College, Northampton, Mass.: 80. Edmonson County, Kentucky.
- GROBMAN, ARNOLD B. 1944. The distribution of the salamanders of the genus *Plethodon* in eastern United States and Canada. Ann. N. Y. Acad. Sci., 45, Art 7: 265.
- HIBBARD, CLAUDE W. 1936. The amphibians and reptiles of Mammoth Cave National Park proposed. Trans. Kansas Acad. Sci., 39: 279. Edmonson County, Kentucky.
- MATTHES, BENNO. 1855. Die Hemibatrachier im Allgemeinen und die Hemibatrachier von Nord-Amerika im Speciellen. Allg. deutsche Natur. Zeitung, Neue Folge, 1: 273. Original description of *phoca*.
- NEILL, W. T. 1941. A collection of salamanders from Georgia. Copeia, No. 3: 177. DeKalb County, Georgia.

- NETTING, M. GRAHAM. 1933. The amphibians of Pennsylvania. *Proc. Pa. Acad. Sci.*, 7: 106. Clearfield County, Pennsylvania.
- SCHARLINSKI, HANS. 1939. Nachtrag zum Katalog der Wolterstorff-Sammlung im Museum für Naturkunde und Vorgeschichte zu Magdeburg. *Abh. Ber. Mus. Nat. Magdeburg*, 7: 57. Norfolk County, Virginia.
- STEJNEGER, LEONHARD, and THOMAS BARBOUR. 1943. A check list of North American amphibians and reptiles. *Bull. Mus. Comp. Zool.*, 93(1): 15.
- WELTER, W. A., and KATHERINE CARR. 1939. Amphibians and reptiles of northeastern Kentucky. *Copeia*, No. 3: 129. Rowan and Carter Counties, Kentucky.



Distribution of *Desmognathus monticola*. Solid circles represent the specimens examined; hollow circles, the records listed in the Annotated Literature List and reports for Bath and Alleghany Counties, Virginia (from a letter by Richard L. Hoffman dated November 9, 1944); hollow triangles, the outlying records discussed in the text; solid triangle, the type locality of *phoca*; and dashed line, the division between the Appalachian Highlands and the Interior Plains Physiographic Divisions.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SUBSPECIES OF *EUSCARTHMORNIS ZOSTEROPS*.

BY JOHN T. ZIMMER.

Several years ago, when working on this species (*cf.* Amer. Mus. Novitates, no. 1066:13-15, May 3, 1940), I had in hand two examples from Palmares, Pernambuco, Brazil, collected by E. Kaempfer for Mrs. E. M. B. Naumburg. These two birds differed appreciably from the rest of the material examined but were not described at the time since it was thought that their discussion might properly be left to Mrs. Naumburg in her current studies of east-Brazilian birds.

Recently, however, Dr. Herbert Friedmann of the U. S. National Museum, sent me for determination a rather disarranged specimen of the same new form, also from the state of Pernambuco, taken at Recife, not far from Palmares. Since a name is now needed for this subspecies, Dr. Friedmann has suggested that I publish my notes concerning it, and Mrs. Naumburg has kindly concurred. Owing to the better condition of the Kaempfer skins, one of them is taken as the type. I take pleasure in naming the new form for Mrs. Naumburg in recognition of her contributions toward a better knowledge of the birds of Brazil.

Euscarthmornis zosterops naumburgae, new subspecies.

Type.—From Palmares, Pernambuco, Brazil; altitude 600 feet. No. 243736 American Museum of Natural History. Adult male collected March 4, 1927, by Emil Kaempfer; original no. 4635.

Diagnosis.—Similar to *E. z. zosterops* of the Rio Negro, Brazil, and adjacent areas, but upper parts lighter, yellower green and belly whitish, not strongly yellow. From *E. z. flaviviridis* of northern Peru it differs by slightly duller or darker upper parts and decidedly more whitish belly. From the intervening *E. z. griseiceps* of the Amazon Valley, it differs by the distinctly olivaceous breast and slightly greenish flanks, although the upper parts are much the same in both forms.

Range.—Known only from eastern Pernambuco, Brazil.

Description of Type.—Top of head noticeably striated, with dark brown shaft-stripes margined with Roman Green;¹ mantle near Roman Green; uropygium slightly lighter. Lores white, finely tipped with blackish; eyelids with a ring of pale buffy feathers; auriculars about like the mantle; chin and upper throat with dusky gray shaft-stripes and whitish or ashy margins; lower throat and breast with similar grayish stripes, but with the margins tinged with Primrose Yellow; sides of breast unstriped Yellowish Olive; belly whitish, faintly tinged with pale greenish yellow, strongest laterally; under tail-coverts pale greenish. Wings blackish brown with very narrow dull greenish outer margins on the primaries, broader on the secondaries especially distally where also they are brighter, and still broader and more whitish on the tertials; two prominent wing-bars Naphthalene Yellow; lesser upper wing-coverts like the mantle; under wing-coverts pale yellow; inner margins of remiges whitish. Tail dark brown with outer margins narrowly greenish; shafts dark brown above, whitish below. Bill (in dried skin) black; feet dull brown. Wing, 50 mm.; tail, 44; exposed culmen, 10.5; culmen from base, 14; tarsus, 14.5.

Remarks.—The comparative material examined has already been listed (*t. c.*: 15) with the exception of the three examples of the new form and need not be repeated here. The citation of the new subspecies may be appended as follows:

Euscarthmornis zosterops naumburgae.—

BRAZIL:

Palmares, Pernambuco, 2 ♂ (incl. type);² Recife, Pernambuco,
1 ♂.³

¹ Colors are capitalized when direct comparison has been made with Ridgway's "Color Standards and Color Nomenclature."

² Specimens in American Museum of Natural History, New York.

³ Specimen in U. S. National Museum, Washington, D. C.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NEW SCINCID LIZARDS OF THE GENERA
TROPIDOPHORUS AND *LYGOSOMA* FROM NEW
GUINEA.

BY ARTHUR LOVERIDGE.

Recently my colleague Captain P. J. Darlington Jr., through the courtesy of the Australian New Guinea Administrative Unit, was enabled to spend his local leave in a brief visit to the little-known Mount Wilhelm, 15,400 feet. With customary zeal Dr. Darlington preserved representatives of the reptiles he encountered. It is hoped to report more fully on his collection at a later date, but as three species of lizards are apparently undescribed and one of them is of a genus (*Tropidophorus*) not known to occur in New Guinea, it seems advisable to publish their descriptions without further delay.

Tropidophorus darlingtoni sp. nov.

Type.—Museum of Comparative Zoölogy, No. 47051, a gravid ♀ taken between 5000-6000 feet on Mount Wilhelm, Bismarek Range, Madang Division, New Guinea, by Captain P. J. Darlington, Jr., October, 1944.

Paratypes.—Museum of Comparative Zoölogy, Nos. 47052-3, being two juveniles with same data as the type.

Diagnosis.—In complete agreement with the generic characters as defined by Malcolm Smith (1935, Fauna of British India, Rept. & Amph. 2, p. 322). Shields and scales smooth, in 34-36 rows around midbody; frontonasal entire; postmental entire; a pair of enlarged preanals. In the following description the paratype variations are given in parentheses.

Description.—Head shields smooth; frontonasal broader than long; prefrontals in contact; combined length of prefrontals and frontal as long as that of frontoparietals and interparietal; a frontoparietal subequal to the interparietal; parietals forming a suture behind the interparietal; supraoculars 6, first largest, last very small, none bordering the eye;

supraciliaries 7 (8); upper labials 5, the fourth below the centre of the orbit, from which it is separated by small suboculars; lower labials 4; tympanum smaller than the orbital opening.

Body-scales smooth, in 34 (36) rows around midbody, dorsals subequal to ventrals; a pair of enlarged preanals; body moderate, the toes of the adpressed hind limb well separated from the fingers of the backward pressed forelimb (overlapping in juvenile paratypes); digits moderate, with smooth lamellae below, 12-13 (12-15) beneath the fourth toe; tail (probably reproduced) stout, very slightly compressed, shorter (longer in one paratype) than the head and body.

Color.—Above, pale brown, heavily speckled and mottled with darker, particularly on head; lips plumbeous spotted with white; flanks paler than dorsum, an ocellus-like spot just above insertion of forelimb (rather more distinct in young than in adult); limbs pale, handsomely variegated with darker. Below, chin and throat to forearms plumbeous, each scale with a small pale spot at its base (white in young with scattered flecks, especially towards the sides); breast and belly immaculate white (pinkish in life in type?); tail anteriorly white heavily speckled with plumbeous, posteriorly wholly plumbeous (not so in young where the entire underside of the tail is like the anterior portion of the adult).

Size.—Total length of ♀ type (M.C.Z. 47051), 116 (63+53) mm., but tail apparently regenerated; of juvenile paratype (M.C.Z. 47052), 92 (42+50) mm., tail intact.

Remarks.—This new lizard, which apparently constitutes the first record of the occurrence of the genus *Tropidophorus* in New Guinea, is not closely related to any of the described forms. In the plumbeous coloring of its throat and lips, especially in the position of the white spots on the labials, *darlingtoni* duplicates the coloring of *rivularis* Taylor. That Philippine species, however, has strongly keeled dorsal scales, whereas *darlingtoni*, in its smooth scalation conforms to the Bornean *beccarii* and *mocquardi* as well as to the mainland *berdmorei* and *laotus*. In this connection it is interesting to note that the halfgrown young are perfectly smooth, for Malcolm Smith (*loc. cit.*, p. 324) says of this genus that: "The young at birth have always keeled scales."

Breeding.—Largest ova in type measure only 2 mm. in diameter.

Lygosoma (Leiolopisma) prehensicauda sp. nov.

Type.—Museum of Comparative Zoölogy, No. 47057, an adult ♂ taken between 7500-8000 feet on Mount Wilhelm, Bismarck Range, Madang Division, New Guinea, by Captain P. J. Darlington, Jr., October, 1944.

Paratype.—Museum of Comparative Zoölogy, No. 47058, an adult ♂ with the same data as the type.

Diagnosis.—Referable to the section *Leiolopisma* as redefined by Malcolm Smith (1937, Rec. Indian Mus., 39, p. 223) in his section B.b., though snout might well be called subacuminate. Related, though not closely except in scale-counts, to *L. anolis* (Boulenger) of the Solomons. *L. prehensicauda* is a larger, stouter species with a blunter, less

acuminate, snout than that of *anolis*; the toes of the adpressed hind limb are widely separated from the fingers of the backward pressed forelimb, certainly not reaching to the elbow as in the slender-limbed *anolis*. The parietals are well separated by the interparietal; there are no definite nuchals; the dorsals are striated, not smooth; and the peculiar subcaudal scalation of *prehensicauda* is lacking in our extensive series of *anolis*. In the following description paratype variations are given in parentheses.

Description.—Head shields rugose; frontonasal broader than long; prefrontals broadly in contact; combined length of prefrontals and frontal greater than that of frontoparietals and interparietal; a frontoparietal subequal to the interparietal, which separates the parietals, which are bordered posteriorly by 2 or 3 irregularly enlarged shields and an elongate upper temporal; no supranasal; nasal entire; a postnasal and an anterior and posterior loreal; supraoculars 4 (5 if a very small anterior one is included); supraciliaries about 7 or 9 (6 or 8); lower eyelid with a transparent disk; upper labials 8 (7-10), the seventh (sixth or eighth) below the center of the orbit from which it is separated only by the granules of the lower lid; lower labials 8-10 (7-8); ear-opening very small, without projecting lobules.

Body scales in 38 rows around midbody, the dorsolaterals finely striated, the 4 dorsal rows enlarged, slightly larger than the smooth ventrals; anals irregularly enlarged; body moderate; limbs short, the toes of the adpressed hind limb widely separated from the fingers of the backward pressed forelimb; fingers moderate or short, toes longer, with smooth lamellae below, 15 (16-17) beneath the fourth toe, the 6 (7-8) distal ones differentiated from those on the depressed basal portion; tail stout, cylindrical, slightly longer than head and body, on the underside towards the tip are a series of about 28, brown, slightly swollen, transverse shields which, taken in conjunction with the curled tip, suggest that they supplement a grasping organ.

Color.—Above, greenish olive, merging into vivid green on sides of body and underside of tail, which is sepia brown towards the tip. Below, greenish white, except end of tail.

Size.—Total length of ♂ type (M.C.Z. 47057), 141 (69 + 72) mm., of paratype ♂ (M.C.Z. 47058), 125 + (65 + 50 +) mm., but tail regenerating.

Lygosoma (*Leiopisma*) *elegantoides lobulus* subsp. nov.

Type.—Museum of Comparative Zoölogy, No. 47067, an adult ♂ taken from between 7500-8000 feet on Mount Wilhelm, Bismarck Range, Madang Division, New Guinea, by Captain P. J. Darlington, Jr., October, 1944.

Paratypes.—Museum of Comparative Zoölogy, Nos. 47068-82 with same data as the type.

Diagnosis.—Very closely related to *elegantoides* Ahl (nom. nov. for *elegans* Boulenger, preoccupied by *Hinulia elegans* Gray), from which our fifteen specimens differ in having 34-36 rows of scales around mid-

body, and in having the digits uniformly compressed throughout their length, the subdigital lamellae of the distal portion not or but scarcely differentiated from those of the basal.

Dr. Malcolm A. Smith, who has kindly reexamined Boulenger's type, informs me that both it and a second example from Mondo actually have 32 (not 30) midbody scale-rows and 1 or 2 distinct ear lobules. He also says that the degree of differentiation between the subdigital lamellae of the distal portion and those on the basal part is *more marked* than in his (Malcolm Smith, 1937, Rec. Indian Mus., 39, p. 216, fig. f) figure of *Dasia vittata*. In *lobulus* any differentiation there may be is certainly *less marked*. Malcolm Smith places "*elegans*" in his section B. a. described as having "Lamellae beneath the basal phalanges transversely enlarged and differentiated from those on the terminal phalanges (except in *pulchellum*). Snout subacuminate; prefrontals separated from one another; tail? prehensile." Evidently *L. lobulus* furnishes a second exception, and there seems to be no grounds for thinking its tail is prehensile.

The feet of the new species have yellow-green soles, suggesting evidence of affinity with *elegantoides* Ahl and *flavipes* Parker. It agrees with the former, but differs from both the latter and *parkeri* Malcolm Smith in its much longer limbs, the toes of an adpressed hind limb reaching the elbow or axilla. In the following description paratype variations are given in parentheses.

Description.—Head shields smooth; frontonasal broader than long; prefrontals narrowly in contact (separated in 13 of the 15 paratypes); length of frontal equal to (rarely a trifle shorter or longer than) the combined lengths of frontoparietals and interparietal; a frontoparietal is subequal to the interparietal, latter separates the parietals, each of which is bordered externally by 3 enlarged shields, the hindmost being the first of a series (1-3) of paired nuchals; no supranasal; nasal entire; an anterior (horizontally divided on right side only of M.C.Z. 47073) and a posterior loreal, the former being in contact with a prefrontal; supraoculars 4, *only the 2 anterior ones in contact* with the frontal (except in one young paratype (M.C.Z. 47082) where apparently 3 are in contact); supraciliaries 8 (7-8); lower eyelid with a transparent disk; upper labials 7 (constant), the fifth (constant) below the center of the eye; lower labials 7-8 (6-8); ear-opening larger than the palpebral disk, with several (1-3) projecting lobules on its anterior border.

Body scales smooth, in 34-36 rows around midbody, the 2 dorsal rows enlarged, slightly larger than the ventrals; anals irregularly enlarged; body moderate; limbs long, the toes of the adpressed hind limb reaching the elbow (in all adults, whether gravid or otherwise; reaching the axilla in subadult and young specimens); fingers and toes compressed throughout, long, the fourth toe longest, with smooth lamellae below, 24 (19-23) beneath the fourth toe, the distal ones undifferentiated from those on the basal portion; tail moderate, subcylindrical, slightly depressed, tapering, much longer than head and body, not prehensile.

Color.—Above, dark brown; head shields mottled with black; body with numerous pale flecks; a more or less interrupted white stripe from ear-opening to groin forms the lower edge of an indistinct (distinct in young) lateral band; tail with black spots arranged in pairs (frequently forming transverse bars in young). Below, white, scales of chin, throat, and underside of tail more or less flecked with brown.

Size.—Total length of type ♂ (M.C.Z. 47067), 146 (60+86) mm., of ♀ (M.C.Z. 47068), 135 (55+80) mm.





PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NEW TREE-FROGS OF THE GENERA *HYLA*
AND *NYCTIMYSTES* FROM NEW GUINEA.

BY ARTHUR LOVERIDGE.

In a recent paper (Proc. Biol. Soc. Washington, 58, pp. 47-52) I described three new skinks presented to the Museum of Comparative Zoölogy by Captain P. J. Darlington, Jr., who obtained them during his ascent to the summit (15,400 feet) of Mount Wilhelm, previously climbed, I understand, only by three Australian officials.

The present article deals with three new hylids collected by Darlington, and two others that had long been in the collection under the wrong names they bore when received in exchange. With these new species I have associated the names of Dr. Darlington and Sergeant William M. Beck, Jr., for to the latter we are also indebted for an extensive Guinean collection. Another frog is named for Dr. L. D. Brongersma, whose painstaking researches have done so much to add to our knowledge of the herpetofauna of Dutch New Guinea from which it comes.

Hyla darlingtoni sp. nov.

Type.—Museum of Comparative Zoölogy, No. 25890, a gravid ♀ from Mount Wilhelm, 5000-8000 feet, Bismarck Range, Madang Division, New Guinea, collected by Captain P. J. Darlington, Jr., October, 1944.

Diagnosis.—Near *H. papuensis* Werner, of the Torricelli Mountains, from which it differs in having the head as long as broad (not a little broader than long); snout twice (not once and a half) as long as the orbital diameter; tympanum seven-eighths (not a little larger than half) the orbital diameter; fingers somewhat less webbed; tibio-tarsal articulation of the adpressed hind limb reaches anterior border of eye (not the snout); back without (not with longitudinal rows of) warts; heels without (not with) a dermal appendage; color entirely different.

Description.—Head as long as broad; snout subacuminate, its length

(to anterior corner of eye) slightly less than the distance separating the anterior corners of the eyes, the distance from its tip to the nostril one-third that between the nostril and anterior border of the eye or one-third the orbital diameter; canthus rostralis obtusely rounded, curved; loreal region oblique, slightly concave; interorbital space nearly twice as broad as an upper eyelid; tympanum large, seven-eighths the orbital diameter; tongue large, subcordiform, distinctly emarginate behind and slightly free; vomerine teeth in two short, juxtaposed clumps between the choanae from which they are separated by a distance equal to one clump.

Fingers two-thirds webbed, the web reaching to the tubercle on first and third, to the disk on second and fourth, though as a narrow margin on the fourth; first finger shorter than second, which is shorter than fourth, which is shorter than the third; disk of third as large as the tympanum; toes webbed to the disks; subarticular tubercles prominent; an oval inner but no outer metatarsal tubercle; tibio-tarsal articulation of the adpressed hind limb reaches to the anterior border of the eye.

Skin above smooth or indistinctly granular; a curved supratympanic fold; a series of tubercles on forearm from elbow to wrist and a dermal ridge along outer edge of fourth finger; no lappet on heel but a dermal ridge from heel along outer edge of fifth toe. Below, chin, throat, breast, belly and thighs granular.

Color in formalin.—Above, blue gray, from snout to lumbar region a narrow, pinkish, vertebral line; from posterior border of eye to above axilla a broad pinkish area speckled with blue gray; groin and thighs, both before and behind but not above, black handsomely variegated with pure white. Below, chin and throat dusky; chest, abdomen, and underside of thighs white; tibia variegated with black and white; feet and hands grayish.

Size.—Length of gravid ♀ from snout to anus 50 mm.

Hyla angularis sp. nov.

Type.—Museum of Comparative Zoölogy, No. 25891, a ♂ from Mount Wilhelm, 5000–8000 feet, Bismarck Range, Madang Division, New Guinea, collected by Captain P. J. Darlington, Jr., October, 1944.

Affinities.—This distinctive *Hyla* does not appear to be closely related to any New Guinean species. In van Kampen's (1923) key it comes near *H. everetti* of Sumba Island, Dutch East Indies from which it differs in many respects.

Apparently referable to this species are nine juvenile frogs (M.C.Z. 25892–9) ranging from a 17 mm. (snout to anus) specimen with tail, and a 21 mm. example without tail, to a 38 mm. frog. The larger ones show well the sharply angular canthus rostralis for which this species is named. Nor do they differ structurally from the type apart from the absence of vomerine teeth in some, the dermal series of tubercles on forearm is undeveloped in a few, and the tibio-tarsal articulation of the adpressed hind limb reaches beyond the end of the snout in two specimens.

Description.—Head longer than broad; snout subacuminate, its length (to anterior corner of eye) equal to two-thirds the distance separating the anterior corners of the eyes, the distance from its tip to the nostril equal to half that between the nostril and anterior border of the eye or three-quarters the orbital diameter; canthus rostralis sharply angular, almost straight; loreal region vertical, scarcely concave; interorbital space nearly twice as broad as an upper eyelid; tympanum moderate, about half the orbital diameter; tongue large, subcordiform, distinctly emarginate behind and slightly free; vomerine teeth in two rather indistinct, oblique groups between the choanae.

Fingers half webbed except the first which is only webbed at base, the web reaching to, or just beyond, the tubercle on the second, third, and fourth fingers; first finger much shorter than second, which is shorter than fourth, which is shorter than the third; disk of third almost twice as large as the tympanum; toes webbed to the disks except the fourth which has the last joint free or narrowly margined with web; subarticular tubercles prominent, an oval inner but no outer metatarsal tubercle; tibio-tarsal articulation of the adpressed hind limb reaches the nostril.

Skin above smooth or indistinctly granular; a curved supratympanic fold; a series of tubercles on forearm from elbow to wrist and a slight dermal ridge along outer edge of fourth finger; though a male the nuptial swelling at base of first finger is unpigmented; no lappet on heel, and a dermal ridge only along the outer edge of the fifth toe. Below, chin and throat smooth; breast, belly, and thighs granular.

Color in formalin.—Above, blue-black, an irregular, broad, pinkish band from end of snout to groin where there is a purplish suffusion extending along anterior side of thigh to tibia; beneath the eye this band is interrupted by a blue-black patch which extends backwards to the angle of the jaw; hinder side of thighs pinkish with irregular dusky markings; upper side of thighs, tibiae, and outer edge of feet white; innermost fingers and toes white, the outer ones dark at base, dusky at tips. Below, white, uniform.

In color the paratypes differ considerably from the type, the heads of the younger are uniformly blue-black, of the larger ones the lips may be edged with white foreshadowing the broad rostrolateral band of which there is no trace.

Size.—Length of type ♂ from snout to anus 45 mm.

Hyla becki sp. nov.

Type.—Museum of Comparative Zoölogy, No. 25900-9 an apparently fully adult ♂ taken among rocks beside a brook in the forest on Mount Wilhelm, 7,500-10,000 feet, Bismarck Range, Madang Division, New Guinea, collected by Captain P. J. Darlington, Jr., October, 1944.

Paratypes.—Museum of Comparative Zoölogy, Nos. 25901-9, being thirty-nine frogs, mostly young, with same data as the type.

Diagnosis.—Near *H. vagabunda* Peters & Doria, of Sorong, New Guinea, with which it agrees in size but differs in the snout being once and a half (instead of scarcely longer than) the orbital diameter; canthus

rostralis angular (not more or less rounded); nostril midway between tip of snout and anterior border of eye (not nearer snout); skin warty (not just smooth) above; no white line (either in type or young) from tip of snout along canthus rostralis to tympanum.

The possibility of identifying this species with *Hylella wolterstorffi* Werner, of New Guinea, has been considered. Werner's 23 mm. holotype, being young, lacked vomerine teeth, so his description was compared with a 23 mm. paratype of *becki* lacking vomerine teeth. It was found to differ in the interorbital space being once and a third (not twice) the width of an upper eyelid; the tympanum being half (not a fifth) of the orbital diameter; disks of toes larger or as large (not smaller than) the tympanum, etc.

Description.—Head as long as (or slightly longer than) broad; snout subacuminate or roundish, its length (to anterior corner of eye) about three-quarters (to seven-eighths in young) the distance separating the anterior corners of the eyes, the distance from its tip to the nostril about equal to that between the nostril and anterior border of the eye or three-quarters the orbital diameter; canthus rostralis angular, straight; loreal region feebly oblique, concave; interorbital space once and one-third as broad as an upper eyelid; tympanum moderate, about half the orbital diameter; tongue large, subcordiform, distinctly emarginate behind and slightly free; vomerine teeth in two oblique groups between the posterior borders of the choanae from which they are well separated.

Fingers free; first much shorter than second, which is slightly shorter than the fourth, which is shorter than the third; disk of third much larger than the tympanum; toes two-thirds webbed except the first which is scarcely webbed to the tubercle, the others webbed just beyond the tubercle and thereafter only as a narrow seam sometimes reaching to the disk; subarticular tubercles prominent; an oval inner but no outer metatarsal tubercle; tibiotarsal articulation of the adpressed hind limb reaches well beyond end of snout (in paratypes to between eye and nostril or beyond end of snout).

Skin above smooth with conspicuous tubercles on hinder portion of eyelids, flanks, and forelimbs; a curved supratympanic fold; a few scattered tubercles forming an ill-defined series on outer edge of forearm; though a male the nuptial swelling at base of first finger is scarcely pigmented; no lappet on heel nor dermal ridge along outer edge of foot. Below, throat slightly granular; breast, belly, and thighs granular.

Color in formalin.—Above, plumbeous; a white patch on upper lip beneath eye; flanks flecked with white; thighs paler than back, faintly flecked with plumbeous. Below, dusky brown or grayish (ranging to whitish in paratypes) more or less flecked or spotted with darker and lighter.

Size.—Length of adult ♂ from snout to anus 38 mm.

***Hyla brongersmai* sp. nov.**

Type.—Museum of Comparative Zoölogy, No. 15203, an adult ♂ from

Parana Valley, central Dutch New Guinea, collected by Dr. P. Wirz, 1925.

Diagnosis.—This frog, originally received from the late Dr. Jean Roux as *H. arfakiana* Peters & Doria, has little in common with that 70 mm. species, for it is adult (by dissection) at 24 mm. Nor is it closely related to the 52 mm. *H. wirzi* Roux (1927) taken by Wirz at Sentani.

H. brongersmai belongs to that group of dwarf species which never acquire vomerine teeth. It is apparently related to *chloronota* (Boulenger) of the Arfak Mountains, Dutch New Guinea, from which it differs in the snout (to eye) being much longer than (not as long as) the orbital diameter; tympanum about three-quarters (not about half) the orbital diameter; outer fingers half (not a third) webbed; apparently a large external (or internal) vocal sac on hinder part of throat; upper side of thighs spotted (not narrowly striped with green), etc.

Description.—Head as long as broad, snout blunt, its length (to anterior corner of eye) about two-thirds the distance separating the anterior corner of the eyes, the distance from its tip to the nostril slightly more than half that between the nostril and anterior border of the eye or slightly more than half the orbital diameter; canthus rostralis obtusely angular, almost straight; loreal region vertical, not or but slightly concave; interorbital space once and a half as broad as an upper eyelid; tympanum large about three-quarters the orbital diameter; tongue moderate, subcordiform, distinctly emarginate behind and slightly free; vomerine teeth absent (though frog adult).

Fingers webbed, outer half-webbed, rest barely to tubercle on one side only; first finger much shorter than second, which is slightly shorter than fourth, which is shorter than third; disk of third as large as the tympanum, as large as that of fourth but much larger than those of first and second; toes webbed to the disks except the fourth which has the last joint free, and the first, which is webbed only to the tubercle; subarticular tubercles prominent, an oval inner but no outer metatarsal tubercle; tibiotarsal articulation of the adpressed hind limb reaches end of snout.

Skin above smooth or indistinctly granular; a curved supratympanic fold; no dermal ridge or series of tubercles on forearm; being a male there is a partly pigmented nuptial swelling at base of first finger; no lapet on heel nor dermal ridge along outer edge of foot. Below, throat smooth, breast, belly, and thighs granular.

Color in alcohol.—Above, plumbeous, paling towards the dark brown flanks and thighs which are spotted with lighter; tibia, feet, and forelimbs brown with indistinct lighter markings. Below, lips brown blotched with white; chin dark brown; throat, breast, and belly yellowish; underside of limbs pale brown more or less flecked with lighter.

Size.—Length of adult ♂ from snout to anus 24 mm.

Nyctimystes milneana sp. nov.

Type.—Museum of Comparative Zoölogy, No. 11652, a gravid ♀ from Milne Bay, Eastern Division, Papua. Collector unknown.

Remarks.—This frog, received twenty years ago in exchange, was labeled *Hyla montana* Peters and Doria. On comparing it with a good series of that species collected by Captain P. J. Darlington, however, it is seen to have little in common with that species. Nor does it seem referable to any known *Hyla*.

Though the pupil of the eye is fully dilated there is a basal nick indicating that it would be vertical when contracted, moreover, on being compared with *Nyctimystes papua* (Boulenger) and *N. montana* Parker, it shows unmistakable affinities. When describing *montana* Parker (1936, Ann. Mag. Nat. Hist. (10), 17, p. 77) furnished a key to the five species which he recognizes, and it would appear as if the new form might possibly be a subspecies of his *semipalmata*.

Diagnosis.—Near *N. semipalmata* Parker, from which it differs in having the vomerine teeth in two clumps forming an almost straight line with the posterior edges of the choanae; tympanum moderate, about two-thirds the orbital diameter; tibio-tarsal articulation of the adpressed hind limb reaching to between eye and end of snout; no lappet distinguishable on heel.

Description.—Head slightly longer than broad; snout depressed, its length (to anterior corner of eye) greater than the distance separating the anterior corners of the eyes, the distance from its tip to the nostril twice that between the nostril and anterior border of the eye; canthus rostralis obtusely angular, curved; loreal region obliquely concave; interorbital space narrower than an upper eyelid; tympanum moderate, about two-thirds the orbital diameter; tongue large, subcircular, slightly emarginate behind, scarcely free; vomerine teeth on two raised bones, forming an almost straight line with the posterior borders of the choanae.

Fingers about half-webbed (*cf.* Parker, fig. 5), the larger disks slightly smaller in width than the height of the tympanum; first finger much shorter than second, which is slightly shorter than the fourth; toes webbed to the disks; subarticular tubercles prominent; a small oval inner but no outer metatarsal tubercle; tibio-tarsal articulation of the adpressed hind limb reaches to halfway between eye and end of snout.

Skin smooth above; a curved supratympanic fold; a series of tubercles on forearm from elbow to wrist; no trace of a lappet on heel but a dermal ridge feebly indicated along outer edge of foot. Below, throat smooth, breast, belly, and thighs granular.

Color in alcohol.—Above, pinkish brown, the upper lip edged with white. Below, creamy white, the throat microscopically speckled with black, otherwise uniform.

Size.—Length of gravid ♀ from snout to anus 48 mm.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPECIES OF AEDES FROM THE
CAROLINE ISLANDS.

(Diptera, Culicidae)¹

D. S. FARNER, LIEUTENANT (JG), H(S), USNR.²

A collection of mosquitoes from the Ulithi Islands, western Caroline Islands, contains, in addition to a large number of specimens of *Culex jepsoni* Theobald, a number of specimens of a previously undescribed species of *Aedes* belonging to the *scutellaris* group of the subgenus *Stegomyia*.

Aedes (*Stegomyia*) *hensilli*, new species

Male.—Length about 3 mm., wing about 2 mm. Vertex covered with broad appressed scales with median broad stripe and with two lateral white stripes. Torus with white scales around entire circumference forming a conspicuous broad inner patch. Clypeus bare. Proboscis dark; palpus about length of proboscis, segments with basal white patches, those on apical segments reduced. Anterior pronotal lobe with many white broad appressed scales; posterior pronotum with dark narrow curved scales and a patch of white broad scales opposite anterior pronotal lobe. Scutum with median white stripe narrowing posteriorly and forked in the prescutellar area with an indistinct short posterior sub-median line and a shorter marginal line of white scales over the wing base. Scutellum with white broad appressed scales on all three lobes, a few dark scales on apex of mid lobe. Pleuron with white scales arranged more or less in two parallel lines and scattered spots. Coxae with patches of white scales; inner surfaces of femora with broad pale longitudinal stripe interrupted subapically on hind leg; each femur with a white knee spot; tibiae with dark scales, occasionally with a few apical pale scales. Front and mid tarsus dark usually with small basal patches of white scales on segments I and II; hind tarsal segments with basal pale bands interrupted on inner side of segment I and usually narrower on inner side of the other segments; width of basal white band on outer side of

¹ The author wishes to thank Dr. Alan Stone, Division of Insect Identification, U. S. Department of Agriculture, for his helpful suggestions and assistance.

² Preventive Medicine Division, Bureau of Medicine and Surgery, Navy Department.

segment I $1/5$ to $1/4$ length of segment, always completely interrupted on inner side; width of basal white band on outer side of II $1/5$ to $1/4$ length of segment, width on inner side $1/10$ (or a few pale scales) to $1/4$ length of segment; width of basal white band on outer side of III $1/5$ to $1/3$ length of segment, width on inner side $1/10$ (or a few pale scales) to $1/3$ length of segment; width of white basal band on outer side of IV $1/3$ to $1/2$ length of segment, width on inner side $1/5$ to $1/3$ length of segment; width of basal white band on outer side of segment V about $1/2$ length of segment, width on inner side $1/10$ to $1/2$ length of segment, occasionally completely interrupted by dark scales. Wing with dark scales. Abdominal tergite II with lateral subbasal white spots; abdominal tergites III to VII with subbasal white bands, that on VII sometimes interrupted; abdominal tergite VIII usually with large spot of pale scales. Sternites II to VI with broad subapical bands broadening ventrally and basally; sternite VII dark. Genitalia with basal lobe of basistyle simple and folded similar to *guamensis* Farner and R. Bohart (figures 5 and 6, p. 122, Proc. Biol. Soc. Washington, vol. 57, 1944, or figures 10 and 11, p. 40, U. S. Nav. Med. Bull., vol. 44, 1945) but apparently with thickened bristles extending more basad; dististyle long, curved and somewhat swollen subapically.

Female.—Marks about as in male. Palpus about $1/5$ length of proboscis, apical segment mostly white.

Fourth Instar Larva.—Length about 6 mm. Head slightly broader than long; antenna slender, scarcely tapering, length about one-third width of head; no spicules; a single antennal hair slightly beyond middle of antenna. Clypeal spines very slender, curved downward; anteantennal hair (A) double; lower head hair (B) and upper head hair (C) usually single, occasionally bifid, both anterior to hair A; hair C well behind hair B; postclypeal hair (d) a tuft of 10 to 11 hairs arising at the same level from a common stem; sutural hair (e) and transsutural hair (f) both very fine, single. Thorax: Prothoracic submedian hairs 2 tufts of 3 hairs each, one directly anterior to and smaller than the other; mesothoracic and metathoracic pleural hair tufts each with a very short basal spine. Abdomen: Lateral tuft of first segment of 4–5 hairs; of second, 2–3; of segments 3–5 double; of 6 single; of 7 double. Comb scales of eighth segment 8–14, each with a single sharp apical spine and a basal lateral fringe of fine hairs on each side; eighth segment with 2 siphonal tufts, one of 3–4 hairs, one single; 2 subsiphonal tufts, one single, one with 4–7 hairs; one anal tuft of 3–5 hairs. Siphonal index 2.0–2.6; pecten of variable number (10–16, usually about 14) of evenly spaced teeth with 1–3 lateral spines, occasionally a tooth with two equal spines; a tuft of 2–4 hairs about middle, beyond last tooth of pecten. Dorsal saddle reaching nearly to midline but never fusing ventrally; saddle hair double; dorsal hairs long, one single, one double; gills 4, stout, usually more than twice the length of the anal saddle; ventral brush of about 8 bars with relatively few hairs.

Holotype.—Male, Ulithi Islands, western Caroline Islands, December

1944; George S. Hensill, collector. Paratypes: 5 females, 10 males, same collecting locality, date, and collector.

Type material deposited in U. S. National Museum (Cat. No. 57278).

In addition to the type material, 40 adults and 12 larvae from Ulithi, also collected by George S. Hensill, have been studied.

This species in many respects is intermediate between *marshallensis* Stone and R. Bohart and *guamensis* Farner and R. Bohart although probably much closer to the latter. The basal lobe of the basistyle of *hensilli* is simple and very similar to that of *guamensis* although in the former there appears to be a tendency for the thickened bristles to extend more basad than those of *guamensis*. The basal white bands of the hind tarsi are reduced as in *marshallensis* and, as in this species, the apical half of the fifth tarsal segment is always dark. The tarsal bands approach the interrupted condition of those of *guamensis* in that they are usually narrower on the inside of the leg than on the outside. Occasionally the light bands of segments II-V are interrupted by dark scales on the inside but never as distinctly or completely as in *guamensis*. Abdominal tergites III-VII of *hensilli* have subbasal bands of pale scales although the band on VII is sometimes interrupted; abdominal tergites II-VII in *guamensis* have only basal lateral patches. Although *hensilli* and *marshallensis* can be differentiated sometimes by their tarsal bands, in general these characters are often too variable. However, the highly modified basal lobe of *marshallensis* as compared to the simple corresponding structure in *hensilli* is immediately distinctive. Until a careful study of all the larvae of the *scutellaris* group is made, it will remain difficult to point out distinguishing characteristics of the larvae of individual species. The larva of *hensilli* apparently differs from that of *marshallensis* in having comb scales of the eighth segment with simple teeth and in having a larger number of teeth (8-14 as compared to 7-8) in the pecten. The larva of *hensilli* apparently differs from *guamensis* in having more poorly developed lateral fringes on the teeth of the pecten, and in having fewer branches in the tuft beyond the pecten (2-4 as compared to 5 or 6 in *guamensis*). Furthermore the gills of *hensilli* are usually distinctly longer than those of *guamensis*.

The exact systematic status of *hensilli* cannot be ascertained until materials from other localities in the Caroline Islands are available for examination. Because of the close similarity of the basal lobe of *hensilli* to that of *guamensis*, it is possible that the former is a subspecies of *guamensis*. However, until more material is available and also in view of the differences in tarsal and abdominal banding, it seems best to regard *hensilli* as specifically distinct from *guamensis*.

The notes transmitted by Dr. Hensill indicate that the larvae of *hensilli* were found in empty coconut shells, tree holes, and to some extent in artificial containers such as tin cans as well as discarded drums, barrels, and bottles used by natives. Larvae were not found in leaf axils of pandanus trees or in taro plants. It was also noted that the adults were active primarily at dusk.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW TOMOCYCLUS FROM MEXICO.

BY PAUL BARTSCH.¹

A recent sending of Mexican Mollusks to the United States National Museum by Miss Marie E. Bourgeois contains a specimen of *Tomocyclus* collected by Professor Luna at Santecomapan, Vera Cruz, which requires naming. Fischer and Crosse in their *Mission Scientifique au Mexique et dans l'Amerique Centrale*, Volume 2, part 7, page 124, plate 40, figures 11, 11a, list and figure the present species under the name of *Tomocyclus guatemalensis* Pfeiffer. The specimen which they figure was collected by A. Boucard at San Martin Tuxtla, Vera Cruz, a locality nearby the present gathering. I take pleasure in naming it for Professor Luna.

Tomocyclus guatemalensis (Pfeiffer) came from Alta Vera Paz, Guatemala, and while small and with narrow peristome like the present form, is much stouter and has the whorls much higher than the present species.

***Tomocyclus lunai*, new species.**

Shell small elongate-turritid with pale brown periostracum. Early whorls decollated in the type. The whorls remaining are well rounded and marked by incremental lines only. Suture strongly constricted. Periphery well rounded. Base short, strongly rounded, openly narrowly umbilicated, marked by weak axial ribs. Aperture almost circular; peristome double, the inner moderately exerted, the outer peristome comparatively narrow and very much so on the parietal wall which bears the characteristic notch of the genus.

The type (U.S.N.M. Cat. No. 573547) has 5.5 whorls remaining and measures: Height 25.3 mm., Diameter 11.0 mm.

¹ Published by permission of the Secretary of the Smithsonian Institution.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO RATS FROM MOROTAI ISLAND.

BY REMINGTON KELLOGG.*

Among the mammals recently submitted to the U. S. National Museum for identification are two apparently undescribed rats. These are characterized as follows:

Rattus concolor solatus, subsp. nov.

Type locality.—Morotai Island, Gilolo Group, Moluccas, Netherlands East Indies.

Type specimen.—Male adult, skin and skull; No. 277317, U. S. National Museum; collected October 23, 1944, by J. F. C. and R. M. R.; original number 4.

Distribution.—Known only from type locality.

General characters.—Mammae, 2-2=8. Pelage of upperparts stiff and harsh. Tail equal to or shorter than head and body. Rows of scales on tail 12 to 13 per 10 mm. Hind foot (c. u.) equivalent to about 20 percent of head and body length. Palate extending behind M³. Teeth like *Rattus concolor*, well cusped. M¹ with five roots. M³ not strongly reduced. Upper molar row equivalent to about 17 percent of condylobasal length. Bullae about 18 percent of occipito-nasal length.

Color (terms after Ridgway, Color Standards and Color Nomenclature, 1912).—General color of upperparts near grizzled olive brown, but darker on back than on sides. Hairs on back and sides drab colored, except for short light colored tip which varies from pinkish buff to cinnamon. Spines on back and sides blackish on apical 3 mm. and light colored for remainder of length. Interspersed with hairs and spines are long black overhairs. No underfur. Hairs on underparts olive buff with dusky bases. Upper surfaces of hands and feet whitish. Tail dark, unicolored.

Pelage.—Stiff and harsh on back and sides. Black overhairs on upperparts up to 18 mm. in length. Noticeable admixture of flattened channeled spines on back and sides, each about 11 mm. in length. Hairs on underparts soft. Hairs on hands and feet short, 1.5 to 2 mm. in length and light colored. Tail moderately haired, the majority of these bristle

* Published by Permission of the Secretary of The Smithsonian Institution.

hairs being as long as or only slightly shorter than the length of two scales. Tail moderately scaled, 12 to 13 rows of scales per 10 mm. Ears brownish black, sparsely covered with short hairs externally and short, about 14.5 mm. in length from notch (dried).

Skull.—Similar to that of *Rattus concolor ephippium*, but rostrum more robust and slightly wider at level of maxillo-premaxillary suture. Supra-orbital ridges distinct, extending backward from interorbital constriction along orbital borders of frontals and lateral surfaces of parietals to interparietal. Anterior edge of zygomatic plate (external to infraorbital foramen) straight and not projecting farther forward than in *ephippium*. Bullae narrow, moderately inflated and about 18 percent of occipito-nasal length. Incisive foramina elongated, extending backward to or behind level of front of anterior root of M^1 , widened medially and posteriorly, but attenuated anteriorly. M^3 varying from 1.2 to 1.3 in length. A minute antero-external cusplet on M^2 . Upper incisors smooth, rounded in front, and not retroflected like in *ephippium*, although this difference may be attributable to differences in wear.

Measurements.—*Type*: Total length, 260 mm.; tail, 130; hind foot (c. u.), 25. One male and two female topotypes, respectively: Total length, 240, 248, and 206; tail, 120, 118, and 100; hind foot (c. u.), 25, 25, and 25.

Skull (type and one female topotype): Greatest length, 33, 32.3; condylobasal length, 32.4, 30.4; zygomatic width, 16.1, 15.5; interorbital width, 5.6, 5.5; length of nasals, 11.9, 12.1; palatilar length, 15.7, 15.4; anterior palatal foramina, 6.4, 5.7; length of bulla, 5.9, 5.6; length of upper molar row, 5.1, 4.8; length of mandible, 18.6, 16.9.

Remarks.—According to the description published by Allen,¹ the Buru Island *Rattus burensis* has a pale rufous-brown coloration, spineless pelage, and silvery gray underparts, and thus is quite unlike *solatus*. Examination of the type of *buruensis*, however, revealed that the hairs on the underparts are dark basally and washed terminally with either whitish or ivory yellow. Flattened channeled spines are present in the mid-dorsal region. The general coloration of this rat is also much darker and much more spiny than *Rattus raveni* on Celebes and the rats referred to *Rattus concolor ephippium* on Java and Borneo. The darker and more olive-brown coloration will also distinguish the Morotai rat readily from *Rattus todayensis* and *Rattus vulcani* on Mindanao, Philippine Islands.

Specimens examined.—Total number, 5, from the type locality.

***Rattus morotaiensis*, sp. nov.**

Type locality.—Morotai Island, Gilolo Group, Moluccas, Netherlands East Indies.

Type specimen.—Male adult, skin and skull; No. 277312, U. S. National Museum; collected October 26, 1944, by J. F. C. and R. M. R.; original number 9.

¹ Allen, J. A., Bull. Amer. Mus. Nat. Hist., vol. 30, p. 336. December 21, 1911.

Distribution.—Known only from the type locality.

General characters.—Mammae, 2-2=8. Pelage excessively spiny, above and below. Tail normally longer than head and body. Rows of scales on tail 8 to 9 per 10 mm. Hind foot (c. u.) equivalent to about 18 to 22.7 percent of head and body length. Palate extending behind M^3 . Molar teeth well cusped. M^3 with five roots. A distinct cinguloid-ridge on anterior border of M^1 . M^3 not strongly reduced. Upper molar row equivalent to about 15.5 percent of condylobasal length. Bullae about 14.6 percent of occipito-nasal length.

Color.—General color of upperparts coarsely grizzled olive brown; somewhat lighter in worn pelage. Underparts cream buff, heavily splotched with russet on breast, throat and chin. In some specimens, the cream buff hairs on inguinal and abdominal regions have lighter russet tips. Upper surfaces of hands and feet near wood brown; toes lighter in color. Tail black, unicolored.

Pelage.—Excessively spiny, above and below, except for the rather soft hairs on the chin. No underfur; basal hairs short and sparse. Black overhairs on upperparts up to 35 mm. in length. Spines on back about 16 mm. in length, black on apical 4 mm. or with 1 mm. light tip. Individual spines channeled lengthwise on one side and convex on the other. Flattened hairs on hands and feet short, about 2 mm. in length, and light colored except for dark sub-basal band. Tail scantily haired, almost bare in old adults, but with 3 hairs per scale in immature individuals, the majority of these bristle hairs being slightly longer than the length of one scale. Tail coarsely scaled, 8 to 9 rows of scales per 10 mm. Ears black, sparsely covered with short hairs externally and short, about 15 mm. in length from notch (dried).

Skull.—Rostrum relatively slender; braincase normal; supraorbital ridges distinct from origin on frontals to about 5 mm. behind frontoparietal suture, without postorbital projections, and extending backward on parietals to interparietal in varying degrees of development. Infra-orbital foramen rather wide above; anterior edge of zygomatic plate (external to infraorbital foramen) nearly straight and either vertical or slanting backward (in contrast to the concave or forward slanting anterior edge in the case of *Rattus ringens coenorum*). Zygomatic plate projects distinctly forward in *coenorum* and scarcely at all in this rat. Bullae moderate in size, about 14.6 percent of occipito-nasal length. Incisive foramina elongated, narrow, not noticeably expanded medially and extending backward to or almost to level of anterior end of M^1 . M^3 varying from 1.6 to 1.7 mm. in length. A distinct antero-external cusplet on the M^2 and M^3 of two skulls (Nos. 277310 and 277315); this cusplet is vestigial on the other skulls. Upper incisors smooth, rounded in front, and not unusually deep antero-posteriorly; lower incisors slenderer and anteriorly lighter in color than upper incisors.

As compared with *Rattus ringens coenorum*, this rat has a much smaller skull, the greatest length averaging somewhat shorter, the rostrum is slenderer, the incisive foramina are less widely expanded medially and

posteriorly, the upper tooth row is shorter, and the zygomatic plate does not project forward dorsally.

Measurements.—*Type*: Total length, 405 mm.; tail, 213; hind foot (c. u.), 41. Three male and two female topotypes, respectively; Total length, 375, 383, 437, 397, and 344; tail, 208, 200, 216, 213 and 186; hind foot (c. u.), 38, 38, 40, 38, and 35.

Skull (type): Greatest length, 42.6; condylobasal length, 41.7; zygomatic width, 21.2; interorbital width, 6.4; length of nasals, 15.3; palatilar length, 21; anterior palatal foramina, 7; length of bulla, 6.5; length of upper molar row, 6.4; length of mandible, 25. Three male and two female topotypes, respectively: Greatest length, 42, 45, 44.3, 42.4 and 37.7; condylobasal length, 41.5, 42.7, 44, 41.7, and 35.9; zygomatic width, 22.3, 23.2, 23.4, 21.7 and 19; interorbital width, 6.2, 6.8, 6.7 and 5.6; length of nasals, 15, 16.2, 16, 16 and 13.3; palatilar length, 22.4, 21.7, 22.7, 22 and 18; anterior palatine foramina, 8, 7.5, 8.6, 8 and 7.2; length of bulla, 6.0,—, 6.1, 6.4 and 5.5; length of upper molar row, 6.4, 6.3, 6.2, 6.5 and 6.5; length of mandible, 26.8, 26.5, 27, 27 and 22.

Remarks.—This rat appears to be related more closely to the *Rattus ringens* group of New Guinea than to either the *Rattus rajah* group or other East Indian rats. Although the hind foot averages shorter than that of *Rattus ringens coenorum*, the lengths of head and body and of the tail are similar for adults. As regards cranial measurements, the occipito-nasal length of the skull and the upper tooth row of *coenorum* are somewhat greater than those of the Morotai rat. Furthermore, the rats of the *ringens* group do not have a pelage as spiny as that of the Morotai rat.

Specimens examined.—Total number, 7², from the type locality.

² Skull only.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW AUSTRALIAN NAKED-TAILED RAT
(MELOMYS).

BY REMINGTON KELLOGG.*

Further study of the rodents collected in Australia by Mr. Charles M. Hoy and presented to the United States National Museum by Dr. William L. Abbott has resulted in the discovery of a form which does not appear to have been previously described.

Melomys cervinipes albiventer, subsp. nov.

Type locality.—100 miles south of Port Darwin, Northern Territory, Australia [camp located near either Brooks Creek or Douglas River].

Type specimen.—Male adult, skin and skull; No. 237782, U. S. National Museum; collected October 20, 1920, by Charles M. Hoy; original number 861.

Distribution.—Known only from the type locality.

General characters.—The general coloration is much lighter and duller than the cinnamon-brown *Melomys cervinipes eboreus*, and the hairs of the underparts are pure white to the base in contrast to the slate basal color in *eboreus*. Mammae (inguinal) 0-2=4. Pelage of upperparts soft and dense. Tail longer than head and body. Rows of scales on tail 10 to 12 per 10 mm. Hind foot (c. u.) equivalent to about 21.5 to 24 percent of head and body length. Palate terminating near level of middle of M^3 . Teeth similar to *Melomys cervinipes cervinipes*. M^1 with four roots. M^3 is strongly reduced. Upper molar row equivalent to 18.5 to 20 percent of condylobasal length. Terminal heel of M_1 and M_2 large, equivalent to about half the width of corresponding molar. Bullae strongly reduced, about 15 percent of occipito-nasal length.

Color (terms after Ridgway, Color Standards and Color Nomenclature, 1912).—General color of upperparts light tawny-brown, duller in worn pelage; sides lighter, washed with cinnamon buff. Hairs on back and sides slate color on at least the basal half, with 3 to 4 mm. buffy sub-apical band, and tawny-brown tip. Overhairs dark brown. Hairs

* Published by permission of the Secretary of The Smithsonian Institution.

on underparts white to base, sometimes faintly washed with ivory yellow. Upper surfaces of hands and feet light colored, the individual hairs near dull white. Tail bicolored, darker above and lighter below.

Pelage.—Rather soft and dense. Dark hairs on upperparts measuring up to 12 mm. in length. Hairs on back and sides averaging about 10 mm. in length. Hairs on hands and feet short, not constituting a dense covering. Tail scantily haired, the bristle hairs light to dark colored, generally 3 in a cluster, and less than the length of a scale. Tail with 10 to 12 rows of scales per 10 mm. Ears brownish, sparsely covered with short hairs externally and about 15 mm. in length from notch (dried).

Skull.—Similar to that of *Melomys cervinipes eboreus*, but somewhat smaller, the greatest length (31 to 32.6 mm.) averaging somewhat shorter than *eboreus* (33.7 to 36 mm.); the rostrum is shorter and more robust; and the interparietal tends to be less expanded antero-posteriorly. Supraorbital ridges absent or weakly developed. Anterior edge of zygomatic plate (external to infraorbital foramen) nearly straight and not projecting farther forward than in *eboreus*. Bullae small, about 15 percent of occipito-nasal length. Incisive foramina short, similar to those of *eboreus*, and not extending backward to level of M¹. Small posterior palatine foramina situated at level of transverse maxillo-palatine suture. Zygomatic arches less widely spreading than in *eboreus*. M³ varying from 1.2 to 1.3 mm. in length. Upper incisors smooth, rounded in front, and retroflected to the same degree as in *eboreus*.

Measurements.—*Type*: Total length, 301 mm.; tail, 165; hind foot (c. u.), 31. One male and two female topotypes, respectively: Total length, 300, 258, and 249; tail, 161, 133, and 133; hind foot, 30, 28, and 28. Skull (type): Greatest length, 31.5; condylobasal length, 30.7; zygomatic width, 17; interorbital width, 5; length of nasals, 11; palatilar length, 14; anterior palatine foramina, 5.1; length of bulla, 4.6; length of upper molar row, 5.8; length of mandible, 20. One male and two female topotypes, respectively: Greatest length, 32.6, 31.8, and 31; condylobasal length, 31.8, 29.7, and 29.3; zygomatic width, 16.2, 15.2, and 15.9; interorbital width, 5, 5, and 4.8; length of nasals, 11.8, 11, and 11; palatilar length, 14.5, 14, and 14; anterior palatine foramina, 5, 5, and 5.2; length of bulla, 5, 4.5, and 4.9; length of upper molar row, 5.9, 6.1, and 5.7; length of mandible, 18.5, 17.6, and 17.6.

Remarks.—The four skins referred to this form have been compared with a series of eight *Melomys cervinipes eboreus* obtained by Hoy on the Atherton Tableland, 9 miles south of Ravenshoe. All of these specimens from the Atherton Tableland have the slate basal coloration showing through on the underparts, the individual hairs being slate color on about the basal three-fourths and tipped terminally with whitish or pinkish buff. The pure white coloration of the underparts of *albiventer* is thus quite unlike that of both *cervinipes* and *eboreus*. On the other hand the external dimensions of *albiventer* are quite similar to *eboreus* and *cervinipes*. The skull of the white-bellied *Melomys banfieldi* is much larger than that of *albiventer* and the hind foot of the white-bellied

Melomys murinus is considerably smaller. Both *Melomys littoralis* and *Melomys australis* have a smaller hind foot than *albiventer*. The form here described is referred to the *cervinipes* group chiefly on account of skull and tooth characters as well as similar external dimensions.

Specimens examined.—Total number, 7,¹ from the type locality.

¹ Two represented by skulls only.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NOTES ON FISHES IN THE ZOOLOGICAL MUSEUM
OF STANFORD UNIVERSITY.

XVIII.—TWO NEW SPECIES OF TAMANKA, WITH
A KEY TO THE SPECIES FROM THE PHILIPPINES
AND CHINA.

ALBERT W. C. T. HERRE.

The genus *Tamanka* which I established in 1927, includes those medium sized to very small gobies which are especially distinguished by the presence of many small cycloid scales on the opercles, while the rest of the head is naked. This is in marked contrast to the large assemblage of small gobies which I include in the genus *Vaimosa*, particularly distinguished by having a small number of large ctenoid scales on the opercles, the rest of the head being naked. Other characters of *Tamanka* are the comparatively numerous scales, 38 to 54 in a lateral series, and the increased number of small predorsal scales. The body may be thick and robust, or laterally compressed and slender, with a large broad head, usually flattened on top. The vertical fins are small and low, the dorsals well separated; the broad rounded caudal is usually shorter than the head, with numerous accessory spines which extend upon the caudal peduncle; the oblique terminal mouth has thick lips, with 4 or 5 rows of minute teeth in the lower jaw and 3 or 4 rows in the upper jaw, with an outer row of slightly larger teeth; no canines; gill openings wide, with broad isthmus; no free silky rays on the pectoral. Dorsal VI-I-7 to 8; anal I-7 to 9.

Most of the species live in mangrove or nipa swamps, or in tidal creeks, where the water is more or less brackish. One species, *Tamanka siitensis*,

the type of the genus, lives in fresh water crater lakes on the island of Jolo, and also in streams on Mindanao. So far as known, it is the only fish occurring in the crater lakes of Jolo. In general the species of *Tamanka* are inconspicuous little fishes, overlooked by collectors and scientific students as they live in places little visited or known. Apparently they are rare, with the exception of *Tamanka siitensis*, which swarms in the waters it inhabits. Probably collecting at a different time of year in proper localities would show the species of *Tamanka* to be as abundant as other small gobies, such as *Vaimosa*.

KEY TO THE SPECIES OF TAMANKA KNOWN FROM THE PHILIPPINES AND CHINA.

- A. Scales 38 to 46.
 - B. With 2 longitudinal dark brown bands *T. bivittata*
Habitat: Hainan Island and Kwangtung Province, China.
 - BB. No longitudinal dark bands.
 - C. Body dark brown.
 - D. Uniform dark brown, without markings;
lateral scales 38; transverse 12 *T. umbra*
Habitat: Palawan, P. I.
 - DD. Dark brown with 9 vertical black bands;
lateral scales 44-46; transverse 14
T. talavera
Habitat: Near Capiz, Panay, P. I.
 - CC. Ground color pale tan with brown cross bands.
 - E. Lateral scales 38, transverse 12,
predorsal 16, opercular 24. *T. mindora*
Habitat: Southwestern Mindoro, P. I.
 - EE. Lateral scales 44, transverse 18,
predorsal 24, opercular 40
T. philippina
Habitat: Mangarin, Mindoro, P. I.
- AA. Scales 52-54.
 - F. Body robust, uniform brown to black; predorsal scales 20-24 *T. siitensis*
Habitat: Jolo and Mindanao, P. I.
 - FF. Body slender, brownish yellow, with 10 vertical cross bars; predorsal scales 25-30 *T. tagala*
Habitat: Luzon, and Sitankai, Sulu Islands, P. I.

***Tamanka mindora* Herre, new species.**

Dorsal VI-I 7; anal I-7; scales in lateral series 38; transverse series 12; predorsal scales 16; opercular scales 23 or 24.

The body is rather stout with very gently convex back, the ventral profile horizontal; the depth is 5.1, the head 3.5, the caudal 3.8 times in the length. The oblique mouth is broad, the posterior angle of the maxillary beneath the anterior margin of the pupil; the tip of the tongue is truncate when viewed from above, but is slightly indented when seen from below; the minute teeth are typical of the genus; the eye is in the front half of the head, dorso-lateral in position, 4.4 times in the head, and slightly exceeds the convex broadly rounded snout; the flat interorbital equals the eye; the postorbital is 56% of the length of the head. The vertical fins are small, the dorsals far apart; the tips of the first dorsal spines are filiform, the third spine longest, 2.2 in the head; the second dorsal and anal equal the first dorsal in height and fall far short of the caudal base when depressed; the pointed pectoral is 4.25 times in the length, the pointed ventral 4.6, extending about half way to the anal origin; the least depth of the caudal peduncle is 2.1 in its own length.

The color in alcohol is very pale yellowish tan, largely concealed by 9 or 10 dorsal cross bands of brown and a median row of 8 brown spots along the side; the head is mottled with brown, a darker spot on the opercle; 2 small dark brown spots on the caudal base; the upper half of the first dorsal, except the white thread-like tips, is black; the second dorsal and anal are mottled with brown; the anal and central part of the ventrals are brown; the pectoral is clear or nearly so.

Described from the type, a male 23 mm. long, collected from a brackish water mangrove swamp at Hacienda Waterous, Mangarin, Mindoro, P. I. A juvenile male taken with the type was not used in writing the description.

***Tamanka philippina* Herre, new species.**

Dorsal VI-I-8; anal I-9; lateral scales 44, in transverse series 18; predorsal scales 24; opercular scales 40.

The slender body is laterally compressed, the head broader than the trunk, the dorsal profile nearly horizontal, the ventral outline gently convex; the depth is 5.1, the head 3.5, the damaged caudal 4.4 times in the length; the breadth of the head is 1.6 times in its own length; the eye is high up, dorso-lateral, in the anterior half of the head, 4.2 times in the head; the broad blunt convex snout equals the flat interorbital, 5.25, the postorbital 1.75 times in the head; the oblique mouth is terminal, the angle of the maxillary beneath the anterior third of the eye; the minute teeth are typical of the genus; the truncate tongue is broad at the tip. The vertical fins are all low, the first dorsal with filiform tips, none of them reaching the second dorsal when depressed; the second spine is longest, 2.1 in the head or 7.33 in the length; the middle rays of the second dorsal are highest, equal to the second spine of the first dorsal; the posterior anal rays are highest, a little less than the longest dorsal rays; the

second dorsal and anal fall far short of the caudal base when depressed; the pectorals have been damaged but equal the ventrals, 1.5 in the head or 5.2 times in the length; the ventrals reach little more than half way to the anal origin; the least depth of the caudal peduncle is 1.6 times in its own length.

The color in alcohol is pale whitish tan, with 8 anastomosing brown stripes forming a network over the back and on the sides, and on top of the head; two diagonal stripes from the eye across the preopercle and a similar stripe from the angle of the mouth to the front margin of the opercle; a blue-black spot below the middle of the opercle, just behind its front margin; a white basal band on the first dorsal, and a median black band, the first spine and the tips of the others all white; 3 blackish brown spots on the second dorsal base and a median brown band on the posterior half; a heavy dark brown band on the caudal base, the rest of the fin barred and spotted with brown; the other fins colorless or nearly so.

Described from the type and only specimen, a male 22 mm. long, taken from brackish water at Hacienda Waterous, Mangarin, Mindoro, P. I.

The scalation of this little fish is entirely different from that of any of its congeners.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NOTES ON FISHES IN THE ZOOLOGICAL MUSEUM
OF STANFORD UNIVERSITY.

XIX.—TWO NEW PHILIPPINE GOBIES, WITH KEY
TO THE GENERA OF GOBIES WITH VOMERINE
TEETH.

ALBERT W. C. T. HERRE.

While in charge of fishery investigations in the Philippines, I was compelled to take up the study of gobies because of the great economic importance of certain species at the mouths of streams in northern Luzon. The study soon spread to gobies in general, and during the subsequent years the collection, observation in the field, and critical examination of gobies has continued. The gobioid fishes present problems of great interest and intriguing possibilities to the field naturalist who will pursue them on the coral reefs, in the mangrove swamps, and along the streams and lakes of the oriental tropics especially. Those interested in geographical distribution, variation, adaptation, physiological phenomena, and evolution in general, could find no better vertebrate organisms to work with than some of the gobies (*sensu lato*). Such studies should be carried on chiefly with living material, the investigator working with them in their native habitat.

Some of the gobies present very singular or bizarre variations, often tangential to the ordinary goby structure. One of the remarkable variations, and one which has been forced upon my attention, is that presented by the gobies with teeth on the vomer. These teeth may vary from those rather small in size, and more or less concealed, to those which are relatively of gigantic size. The vomerine teeth of gobies hitherto known are all set transversely on the vomer; they may be widely spaced, but more often their inner edges touch. In those species with the largest and best developed teeth they are firmly united to form a single large chisel-like organ. In one of the new species here presented the arrangement of the

teeth is quite different; the vomerine teeth are small and set one behind the other on the median line of the vomer.

Two new genera and two new species of gobies with vomerine teeth are here presented, together with a key to the genera thus far known of this peculiar section of gobies. Nine genera and 14 species of gobies with vomerine teeth are now known, all but one of which have been discovered by me. Ten of the species are thus far known only from the Philippines; two are known from reefs at Singapore, one from the Pelew Islands, and one from Apia, Samoa. Such a distribution indicates that not only the East Indies but also the whole vast Indo-Pacific tropical area must contain many more gobies with vomerine teeth. The number now known is probably less than half of those actually living on the coral reefs of the tropical Indo-Pacific.

KEY TO THE GENERA OF GOBIES WITH VOMERINE TEETH.

- A. Vomerine teeth set one behind the other on the median line; 3 flaps on inner edge of shoulder girdle; opercle with numerous small scales; a pair of post-symphysial canines in lower jaw.....
Calamiana

One species from Busuanga Island, P. I.

- AA. Vomerine teeth set side by side, across the vomer; no flaps on shoulder girdle, opercle not as above; no post-symphysial canines in lower jaw, as far as known.

- B. Scales ctenoid, 40 or less.

- C. No predorsal scales; lateral series about 24....*Coronogobius*
One species from Busuanga, Is., P. I.

- CC. Predorsal scales present.

- D. Predorsal scales 6; lateral series about 26.

- E. Head and body scaled; no ridges or rows of sensory papillae on head....*Macrodonogobius*
One species from Gorrer, Pelew Islands.

- EE. Head naked with many ridges and sensory papillae; median lateral scales with vertical rows of papillae.....*Intonsagobius*
One species from Jolo, Sulu Islands, P. I.

- DD. Predorsal scales 14-16; lateral series 38-40; head naked; mouth little inclined; sensory papillae scarcely evident; lateral recurved canines in lower jaw.....*Mindorogobius*
One species from southwestern Mindoro, P. I.

- BB. Scales 40 or more, cycloid or ctenoid.

- F. Scales more or less ctenoid, at least posteriorly.

- G. Scales 40–50, more or less cycloid on anterior half, posterior scales enlarged, mouth nearly vertical, chin prominent; no conspicuous lines of papillae on cheeks.....

Mangarinus

One species from Mangarin, Mindoro, P. I.

- GG. Scales 60–65, all ctenoid, or only on posterior half; mouth moderately oblique; head with many conspicuous lines of sensory papillae....

Mars

One species from Samoa and two from the Philippines.

- FF. Scales all cycloid, 60 or more.

- H. Lower jaw projecting, maxillary extended back on preopercle, scales about 60; predorsal area, a strip back to second dorsal, and area below a diagonal from pectoral axil to anus all naked....

Myersina

One species from Culion, P. I.

- HH. Maxillary not extended backward, jaws equal; scales 70 to 85; no scales before line from first dorsal to ventral base; upper lip lined with dense papillate fringe.....

Smilogobius

2 species from the Philippines and 2 from Singapore.

Calamiana Herre, new genus.

Two small incisor-like teeth on the median line of the vomer, one in front of the velum and the other behind it, the teeth well separated. The teeth in the jaws are small to minute, those of the upper jaw in two rows at the front, with a third row of larger teeth some distance behind; lower jaw with two or three rows of teeth, and a pair of symphysial canines behind them. The tongue has a broad, free, lunate tip. There are 3 small fleshy flaps on the inner margin of the shoulder girdle.

The form is wedge-shaped, the trunk laterally compressed, the head large, broad, with blunt rounded snout and large oblique mouth, the maxillary reaching beyond the eye; physiognomy peculiar, a wide deep groove separating the maxillary from the overlapping snout flap and

suborbital; anterior nostril in a projecting tubule which hangs down over the maxillary; eyes small, in the anterior half of the head. The fins are small to medium, the dorsals well separated, the second dorsal and anal not reaching the caudal base when depressed; the caudal is bluntly rounded. The gill openings are a little wider than the pectoral base, the isthmus broad.

Dorsal VI-I-7; anal I-6; scales in lateral series 36 to 40, in transverse series 12; predorsal scales 12 to 15; head naked, except opercles which are covered with small scales; all scales before a perpendicular from the first dorsal cycloid, the rest ctenoid; abdomen and preventral region scaled.

Type of the genus *Calamiana magnoris* Herre, new species. *Calamiana*, from the Calamianes, a group of Philippine Islands. Busuanga, and Culion, with their adjacent islets, are called collectively the Calamianes.

***Calamiana magnoris* Herre, new species.**

Dorsal VI-7; anal I-6; scales in lateral series 38, transverse 12; predorsal scales 14, the anterior one largest and projecting into the interorbital space; opercular scales about 18; pectoral base covered with very small scales.

The form is as given in the generic description, the depth 5.35, the head 3.2, the caudal 3.75, the pectoral 4.28 times in the length. The head is broad, with bulging cheeks, its width 1.5 in its own length; the eye is 5.16, the snout 4.2, the maxillary, which extends almost to the posterior angle of the preopercle, 1.6 times in the head; the postorbital is more than half of the head length; the interorbital is 1.8 times in the eye. The third and fourth spines of the first dorsal are longest, 3.1 in the head or 10 times in the length; the second dorsal and anal are of equal height, their posterior rays longest, 1.86 in the head or 6 in the length; the short wide ventral is 6.66 in the length. The female genital papilla is thin, with lunate tip. Other characters are given in the generic diagnosis.

The color in alcohol is very pale tan, each scale stippled with minute brown dots; a brown stripe runs from the lower margin of the eye across the preopercle and opercle; the dorsals have a few dark spots basally, then a white longitudinal bar, the balance reddish brown; the other fins are all more or less reddish brown.

Described from the type and sole specimen, a female 30 mm. long, collected by me at Coron, Busuanga, July 1, 1940. This is a unique species; its combination of vomerine teeth one behind the other, symphyseal canines in the lower jaw, fleshy flaps on the inner edge of the shoulder girdle, and numerous small opercular scales, set it apart from all other gobies. *Magnoris*, big mouth, from *magna*, large, and *oris*, mouth.

***Coronogobius* Herre, new genus.**

Dorsal VI-I-8 or 9; anal I-7 or 8; scales in longitudinal series 22 to 26, in transverse series 7 to 9; head naked except for a strip of small cycloid scales above the opercle and preopercle, without sensory papillae; all other scales ctenoid except the preventral ones, which are very small and cycloid.

Body laterally compressed, fins low, the ventrals fragile and their frenum very delicate. The eyes are very high up and close together; the chin is prominent, the mouth strongly oblique, the teeth small; the upper jaw has an outer row of enlarged teeth with 2 or 3 rows of minute teeth behind it; in the lower jaw the outer row has larger teeth than in the upper jaw, with a small posterior canine, and three inner rows of minute teeth; on the vomer is a pair of enlarged incisor-like teeth which are not fused or united; the tongue is small, free, its tip rounded. The gill openings are wide, the isthmus broad; no free silky rays on the pectoral.

Type of the genus *Coronogobius striatus* Herre, new species.

Named for the little town of Coron, Busuanga Island, Philippine Islands, where the specimen was obtained.

***Coronogobius striatus* Herre, new species.**

Dorsal VI-I-8; anal I-7; 24 scales in a longitudinal series, plus 1 on the caudal base, and 8 in a transverse series; no predorsal scales, but small scales extend forward on the side above the opercle nearly to the eye.

The body is laterally compressed, the dorsal profile gently arched, the ventral profile a little more arched, the depth almost 4 times (3.96) in the length; the round-pointed caudal equals the compressed head, 3.5 in the length; the large eye is 3 times in the head, dorso-lateral in position, projecting above the dorsal profile, the interorbital very narrow, 7.66 times in the eye; the short broad snout is 2.3 times in the eye; the chin is prominent, the mouth strongly oblique, the angle of the maxillary beneath the anterior fourth of the eye; the first dorsal spines have filiform tips, the longest about 5 times in the length, reaching to the base of the second ray of the second dorsal when depressed; the posterior second dorsal rays are longest, 6 times in the length, the posterior anal rays a very little shorter, both anal and second dorsal falling far short of the caudal when depressed; the pectoral and ventral are equal, 3.88 in the length; the frenum of the ventrals is very thin and delicate, and the ventrals have been torn apart, the whole ventral structure being fragile.

The color in alcohol is pale tan, each scale stippled with minute darker dots; faint traces of darker cross bars on the caudal, and of duskiness on the second dorsal and anal; the head is marked with longitudinal pale stripes as follows: One from the tip of the snout over the rim of the eye to the predorsal region; two from the eye to below the first dorsal origin; a broader one from the snout across the lower margin of the eye to the opercle and upon the pectoral base; a still broader one from the tip of the chin and across the angle of the mouth to the hind margin of the opercle, where it connects by a broad arm with the stripe above, and on back across the pectoral base; a sixth stripe runs from the chin back along the under side of the head as far as the ventral origin.

Here described from the type and only specimen, 21 mm. long, standard length, which I secured among the coral heads of the little dock at Coron, Busuanga Island, Philippine Islands. This is a unique goby, unlike any previously known to me.

(*Striatus*, striped.)

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW ANT-THRUSH FROM VENEZUELA

By HERBERT FRIEDMANN*.

The new species described below was discovered while studying the collection of birds made in the Upper Orinoco and upper Rio Negro by Holt, Blake, and Agostini in 1930 and 1931. My own suspicions regarding it were more than corroborated by Dr. John T. Zimmer, to whose expert eyes the specimens were shown. The bird may be known as

Myrmeciza disjuncta sp. nov.

Type: U. S. Nat. Mus. 328955, immature male, collected at Cerro Yapacana, Upper Orinoco, Venezuela, April 10, 1931, by Holt, Blake, and Agostini on the National Geographic Society's Brazilian-Venezuelan boundary expedition.

Description: Forehead, crown, occiput, nape, scapulars and interscapulars blackish mouse gray with a faint brownish tinge; back, rump, and upper tail coverts similar but without the brownish tinge; the bases of the upper back feathers and of some of the interscapulars white forming a large concealed patch of that color; lesser and median upper wing coverts black narrowly tipped with white; the greater ones without the terminal spots; remiges between dark fuscous and fuscous black; rectrices fuscous black; lores, auriculars, and cheeks neutral gray; chin white; throat and breast white suffused, especially on the sides of the throat and all of the breast, with ochraceous buff to pale ochraceous tawny; sides and flanks ochraceous buff, mixed, especially posteriorly, with blackish mouse gray; middle of abdomen white, thighs and under tail coverts deep mouse gray somewhat mixed with ochraceous buff on the thighs and around the vent; under wing coverts blackish mouse gray; maxilla (in dried skin) entirely blackish; mandible pale yellowish cream buff; tarsi and toes slightly darker than maxilla.

Measurements of type: Wing 58.1; tail 47.9; culmen from base 20 tarsus 29 mm.

The type is molting to some extent and the new, adult feathering is very similar to the older, supposedly immature plumage. An adult

*Published by Permission of the Secretary of the Smithsonian Institution.

female collected at the same locality agrees closely with the type but has the under tail coverts ochraceous buff with no deep mouse gray admixture, and has the lesser and median upper wing coverts narrowly tipped with dusky ochraceous buff. Its measurements are—wing 62; tail 44; culmen from base 21; tarsus 27.1 mm.

Known only from the type locality.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE TAXONOMIC STATUS OF SOME CHIPMUNKS
OF THE GENUS *EUTAMIAS* IN SOUTHWESTERN
UTAH.

By ROSS HARDY, *Dixie Junior College, Saint George, Utah.*

When Howell published his "Revision of the American Chipmunks" (1929, U. S. Dept. Agric. N. Amer. Fauna, No. 52:1-53) he assigned specimens in winter pelage from the Pine Valley Mountains and some in summer pelage from the "Parawan" Mountains of Southwestern Utah to the race *Eutamias quadrivittatus inyoensis*. He had only summer pelage of *Eutamias adsitus* from the Beaver Mountains for comparison. Burt (1931, Jour. Mammal. 12:298-301) later named the race *E. q. nevadensis* from the Sheep Mountains of Southern Nevada.

A series of both summer and winter pelage of *E. adsitus* topotypes and of similar Pine Valley Mountain material as well as summer skins from Duck Creek on the Markagunt Plateau (the "Parawan" Mountains of Howell) have been collected by the writer since the summer of 1939. This material sheds new light upon the probable relationship of *Eutamias* populations of Southwestern Utah. I wish to thank Dr. S. B. Benson of the California Museum of Vertebrate Zoology and Dr. H. H. T. Jackson of the U. S. Fish and Wildlife Service for the use of comparative material. Color terms capitalized are as in Ridgway (1912, Color Standards and Color Nomenclature).

When adult chipmunks from Pine Valley, Washington County, Utah, are compared with adults in similar pelage of topotypes of *inyoensis*, *nevadensis*, and *adsitus*, using characters mentioned by Howell (*op. cit.*:85) and Burt (*op. cit.*:299), the following may be noted:

1. *General color of upperparts*: Material from Pine Valley is very little darker than *inyoensis* topotypes in summer pelage, but winter specimens are more pallid for some (as #1937 Hardy coll.) are nearly indistinguishable from *nevadensis* topotypes. In summer pelage, some specimens are paler than *adsitus*.

2. *Median pair of light stripes*: The amount of tawinness mixed with the

light stripes is greater in Pine Valley summer material than in *inyoensis*, but the winter pelages show no important difference. In 5 of 13 winter specimens from Pine Valley, these light stripes are a lighter gray than the rump as in *nevadensis*. When compared with *adsitus*, there is no appreciable difference in winter, but in summer most have stripes less mixed with tawny.

3. *Outer pair of dark stripes*: In summer pelage, the outer dark stripes in Pine Valley material is much mixed with tawny as in *inyoensis*. Compared with summer *adsitus*, these stripes are less blackish except for #1550 from Pine Valley in which they are as dark as in most *adsitus* and except for #1712 from the Beaver Mountains in which the stripes have much Tawny admixture. In winter the stripes are not as dark as in *adsitus* topotypes.

4. *Short external stripe*: There was a short dark stripe external to the posterior part of the outer light stripes in 5 of 15 *adsitus* topotypes. It was absent in the *inyoensis* and *nevadensis* topotypes. In Pine Valley specimens it was faintly suggested in 9 of 24. In Duck Creek material it was faintly suggested in 2 and present in 3 of a total of 9.

5. *Grayish head*: In summer, Pine Valley material is the same as *inyoensis* topotypes in quality and amount of gray color of the head, but in winter the top of the head is a clearer gray than in either *adsitus* or *inyoensis*, being like *nevadensis*.

6. *Postauricular patches*: About the same size as in *inyoensis* except they are somewhat smaller in a few Pine Valley specimens, being more like *adsitus* in these individuals.

7. *Amount of tawny in dorsum of tail*: At all seasons, the tail is less Tawny than in *inyoensis* and has about the same amount of black and Tawny as *adsitus*.

8. *Color of ventral surface of tail*: The undersurface of the tail (discounting edgings) is uniformly Tawny in 17 topotypes of *inyoensis*. Topotypes of *nevadensis*: Cinnamon Buff, 5. Topotypes of *adsitus*: Tawny, 9; Cinnamon Buff, 2; intermediate between Tawny and Cinnamon Buff, 4 (includes 3 immature). Pine Valley specimens: Tawny, 11; Cinnamon Buff, 4; intermediate, 18 (includes 16 juvenile). Duck Creek specimens: Tawny, 8; Cinnamon Buff, 1.

9. *Color of edging of tail*: Pine Valley animals have the edging Tilleul Buff in 15 specimens while it is intermediate between this shade and Tawny in 18 (includes 16 juvenile). In 17 topotypes of *inyoensis*, the tail edging is Tawny. In 5 *nevadensis* it is Tilleul Buff which looks almost grayish against the dark background. In 12 *adsitus* topotypes, it is Tilleul Buff.

10. *Size of ears*: There is no difference in size of ears between Pine Valley animals and *adsitus* topotypes when fresh specimens are measured in the flesh.

11. *Facial markings*: In Pine Valley material, facial markings are prominent in most individuals, but in #1937 and #1765 they are less distinct, including the almost invisible submalar, as in *nevadensis*.

12. *Color of feet*: The feet are a "lighter clearer gray" as in *nevadensis* in 5 out of 13 winter specimens from Pine Valley.

13. *Interorbital width of skull*: The interorbital width is greater than in *inyoensis* in Pine Valley material measured, being like *nevadensis* and *adsitus*.

Specimens from Duck Creek:

When specimens from Duck Creek are compared, in addition to the characters noted above, they are seen to be almost like topotypes of *adsitus* except for the darker tail with darker and more nearly Tawny edgings, which, however, are not as dark as in *inyoensis*. The outer pair of dark stripes are less Tawny and more nearly black as in *adsitus*. The dark buffy edging of the tail may indicate relationship to the buffy-edge tailed *E. q. hopiensis* or *E. q. quadrivittatus* found farther east instead of to the western *inyoensis*. Howell stated that animals from the Henry Mountains show affinities with typical *quadrivittatus*.

Conclusions:

In view of these variations, it is believed that *Eutamias* from the Markagunt Plateau and the Pine Valley Mountains, while showing affinities to *inyoensis*, represent intergrades between *nevadensis* and *adsitus*, being closer to the latter. Because of these intergrades, *adsitus* should be regarded as conspecific with *nevadensis* and *inyoensis*. They are considered at present as races of *quadrivittatus* because of Howell's statement that there are intergrading characters in the Henry Mountains population of Southeastern Utah. Although material from this range has not been examined, it is unlikely that the Henry Mountains population can longer be considered as *inyoensis*, hence the name *Eutamias quadrivittatus inyoensis* should be deleted from the list of mammals occurring in Utah. The name *Eutamias quadrivittatus adsitus* should be used for the chipmunks of the Beaver Mountains, the Markagunt Plateau, and the Pine Valley Mountains although the animals from the last two areas are intergrades.

Specimens examined:

In addition to 17 topotypes of *inyoensis* and 5 topotypes of *nevadensis* the following 57 specimens of *Eutamias quadrivittatus adsitus*: UTAH, BEAVER COUNTY, Brigg's Meadows and adjacent areas in the Beaver Mountains, 15. KANE COUNTY, Duck Creek, 9. WASHINGTON COUNTY, at various points in the Pine Valley Mountains (6,500 to 10,000 feet altitude), 33.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

NOTES ON *CEMOPHORA COCCINEA* (BLUMENBACH) IN MARYLAND AND THE DISTRICT OF COLUMBIA VICINITY.

Stejneger (1905, Proc. Biol. Soc. Wash. 18: 73) added the Scarlet Snake, *Cemophora coccinea* (Blumenbach) to the list of snakes known to occur in the District of Columbia. The basis for this addition was a specimen in the United States National Museum (No. 35308) collected in 1893 in the vicinity of Anacostia. Previously, in 1862, Prof. A. Wyatt collected this snake from Baltimore, Maryland. This specimen is now No. 750 in the Museum of Comparative Zoology at Harvard College. This was apparently the initial Maryland record for this snake. Another early Maryland record for this species was collected at St. Margarets, Anne Arundel Co., in 1891. Cope (1900, Ann. Rept. U. S. Nat. Mus. 1898, p. 930) mentions this specimen which was sent alive to the Museum but which later escaped.

The present paper lists the subsequent records for *C. coccinea* from Maryland and the District of Columbia vicinity, together with comments on its distribution. These notes were prompted by the recent discovery of another Scarlet Snake in the local region. This new specimen was made available to the writer through the efforts and cooperation of Mr. D. W. Willingmyre and Dr. Martin H. Muma. These subsequent records are as follows:

MARYLAND:

Wicomico Co., Salisbury; collected by J. P. Brown, April 5, 1923 (Univ. of Md. No. 1).

Prince Georges Co., Brandywine (McCauley, 1940, unpublished PhD. thesis, Cornell Univ.—on the basis of a photograph in the possession of C. S. East).

Cephalothorax subovate in outline and flattened dorso-ventrally, with a deep furrow extending backward from the transverse cervical groove to the posterior margin. Dorsum of cephalothorax brownish grey marked by three light yellow stripes, two marginal extending forward from the posterior margin two-thirds length of cephalothorax and one occupying the longitudinal furrow. Sternum dusky brown, seamed with black. Cephalothorax clothed with prostrate pale hairs.

Eyes all on black spots and all pearly white. Eye area occupies less than $\frac{1}{4}$ of length of cephalothorax. Anterior medians about one diameter apart and removed from the anterior laterals by about twice the diameter. Anterior laterals one-fourth size of anterior medians. Eyes on posterior row subequal and about one-third size of anterior medians. Posterior medians twice as far from each other as from the posterior laterals. Clypeus less than the diameter of the anterior medians. Details of palpi are shown in figure 1.

Legs armed with scattered spines except for dorsal surfaces of the anterior tibiae which bear two rows of closely spaced spines. Legs pale yellow with dusky bands that are most prominent on the anterior femora and tibiae.

Abdomen elongate gradually tapering toward the posterior end. Color of abdomen greyish brown marked with a darker median longitudinal band that is margined with pale yellow. Venter dusky outlined rectangularly with a narrow pale band. Spinnerets dusky yellow. Abdomen clothed with short pale prostrate hairs.

<i>Female</i>	<i>Length</i>	<i>Width</i>
Cephalothorax.....	1.9 mms.	1.2 mms.
Abdomen.....	5.3 mms.	2.5 mms.
Over All.....	6.3 mms.	

Female similar to male in structure and color except for the following characters.

Abdomen bears four pairs of small tubercles on the dorso-median stripe.

Anterior tibiae not armed with a double row of spines.

Leg measurements: first leg, femur 2.94 mms., patella .84 mm, tibia 2.58 mms., metatarsus 2.21 mms., tarsus 1.02 mms.; fourth leg, femur 2.10 mms., patella .63 mm., tibia 1.62 mms., metatarsus 1.44 mms., tarsus .90 mm.

The calimistrum, a single row of curved spines borne on the dorso-lateral surface of the posterior metatarsi at the proximal ends, extends more than half the length of the segment.

Details of epigynum are shown in figure 2.

Ecology.—All specimens were taken from webs in barns and sheds.

Records.—College Park, July 7, 1943, seven females and two males by W. F. Jeffers and M. H. Muma (male holotype, female allotype and paratypes). Salisbury, July 16, 1943, four females by W. F. Jeffers (paratypes). Salisbury, May 29, 1944, four males and one female by W. F. Jeffers (paratypes).

Remarks.—This species differs from other American forms in that the abdomen of the female bears four pairs of tubercles; it also differs in details of the genitalia.

DICTYNIDAE.

Dictyna bostoniensis Emerton.

Dictyna bostoniensis Emerton, Trans. Conn. Acad. Sci., 1888, Vol. VII, p. 447, pl. ix, fig. 3.

Ecology.—One female was collected under a board on a beach.

Record.—Ocean City, July 9, 1944, one female by W. F. Jeffers and M. H. Muma.

Dictyna savanna Chamberlin and Ivie.

Dictyna savanna Chamberlin and Ivie, Bull. Univ. Utah, 1944, Vol. 35, No. 9, p. 121, figs. 161–169.

Ecology.—One pair was swept from a low swampy field.

Record.—Denton, August 11, 1944, one female and one male.

MICRYPHANTIDAE.

Grammonota texana (Banks).

Acartauchenius texana Banks, Proc. Ent. Soc. Wash., 1899, Vol. IV, p. 192.

Ecology.—Several specimens were collected in a dry open field.

Record.—Salisbury, August 11, 1944, two males and one young male.

Sciastes mossi n. sp.

	Male	Length	Width
Cephalothorax.....		.48 mm.	.36 mm.
Abdomen.....		.54 mm.	.42 mm.
Over All.....		1.02 mms.	

Cephalothorax obovate in outline, narrowed at eye region and high arched. Color of dorsum dusky yellow with a light shield-shaped area immediately behind eyes. Margins seamed with black. Dorsum naked except for two widely spaced long thin spines on the longitudinal middle line. Sternum, labium and endites dusky yellow somewhat darker than dorsum.

Anterior eye row straight, posterior row lightly procurved. Eyes of posterior row subequal. Anterior medians only one-half size of anterior laterals. Median ocular quadrangle longer than wide and narrowed in front. Area enclosed by eyes, black.

Height of clypeus about twice diameter of anterior lateral eyes. Details of the palpus are shown in figures 3 and 4.

Legs moderately long and armed with weak spines. Except for dusky coxae all legs are light yellow. Measurements of first leg; femur .306 mm., patella .126 mm., tibia .288 mm., metatarsi .225 mm., tarsi .234 mm.; fourth leg, femur .315 mm., patella .126 mm., tibia .288 mm., metatarsus .225 mm., tarsus .234 mm.

Abdomen oval in outline, uniformly colored a dark grey, and sparsely clothed with pale erect hairs. Spinnerets concolorous with abdomen.

<i>Female</i>	<i>Length</i>	<i>Width</i>
Cephalothorax.....	.49 mm.	.34 mm.
Abdomen.....	.54 mm.	.42 mm.
Over All.....	1.03 mms.	

Female similar in color and structure to male. Details of epigynum are shown in figures 5 and 6.

Leg measurements: first leg, femur .306 mm., patella .135 mm., tibia .270 mm., metatarsus .180 mm., tarsus .198 mm.; fourth leg, femur .315 mm., patella .135 mm., tibia .270 mm., metatarsus .180 mm., tarsus .198 mm.

Ecology.—All specimens were sifted from sphagnum moss in a small swamp.

Record.—Branchville, March 12, 1942, several males and females by K. E. and M. H. Muma (male holotype, female allotype, paratypes both sexes). Branchville, October 29, 1944, several males and females by W. F. Jeffers and M. H. Muma (paratypes).

Remarks.—This species is comparable in size to *Sciastes acuminatus* Emerton and *Sciastes vicosanus* Bishop and Crosby. It differs from the latter in having the abdomen dark grey in color; details of the genitalia distinguish it from both.

AGELENIDAE.

Agelenopsis jeffersi n. sp.

<i>Male</i>	<i>Length</i>	<i>Width</i>
Cephalothorax.....	5.5 mms.	3.7 mms.
Abdomen.....	7.0 mms.	3.5 mms.
Over All.....	11.6 mms. (not including spinnerets)	

Leg Formula 4123.

Structure of cephalothorax typical of genus; subovate in outline, narrowed at head region, and arched highest at eye area. Eye area and clypeus armed with several long curved spines. There is also a row of spines extending along the median line halfway to the cephalic furrow. Height of clypeus about twice diameter of anterior lateral eyes. Upper and lower margins of chelicerae armed with three teeth. Details of palpi shown in figures 7 and 8. Color of cephalothorax light yellow darkening to orange on head region with two longitudinal dusky stripes formed by wedge-shaped spots. Dorsum clothed with pale prostrate hairs except over the dark spots where the hairs are erect and dark. Chelicerae reddish brown, endites and sternum orange with the latter having the anterior and posterior margins dusky.

Eyes typical of genus with anterior medians almost twice the size of posterior medians.

Legs moderately long bearing scattered long slender spines. Color of legs light yellow banded with intermittent dusky bars. Measurements of first leg; femur 3.78 mms., patella 1.56 mms., tibia 3.72 mms., meta-

tarsus 3.90 mms., tarsus 1.89 mms.; fourth leg, femur 4.17 mms., patella 1.44 mms., tibia 3.72 mms., metatarsus 4.86 mms., tarsus 2.07 mms.

Abdomen elongate oval in outline. Spinnerets typical for genus. Abdomen light yellow marked with a light red basal lanceolate bar and a pair of dusky undulate longitudinal stripes. Area between stripes pinkish. Sides and venter sprinkled with small dusky spots. On venter spots tend to form two longitudinal rows extending from spinnerets to epigastric furrow. Spinnerets pinkish yellow. Abdomen clothed with short pale prostrate hairs and scattered erect long dark spines.

	<i>Female</i>	<i>Length</i>	<i>Width</i>
Cephalothorax.....		6.0 mms.	3.8 mms.
Abdomen.....		7.0 mms.	4.0 mms.
Over All.....		12.2 mms.	

Structure and color of female similar to that of male. All markings darker and more distinct on female than on male.

Measurements of first leg; femur 3.30 mms., patella 1.50 mms., tibia 3.00 mms., metatarsus 2.94 mms., tarsus 1.59 mms.; fourth leg, femur 3.78 mms., patella 1.65 mms., tibia 3.21 mms., metatarsus 3.81 mms., tarsus 1.80 mms.

Details of epigynum shown in figure 9.

Ecology.—Both sexes have been taken from webs on shrubbery and the sides of houses in one locality.

Records.—Salisbury, August 29, 1943, two males and two females (male holotype, female allotype, paratypes). Salisbury, August 31, 1943, one young male and two young females (paratypes). Salisbury, September 10, 1943, two males and two females (paratypes). Salisbury, August 29, 1942, three young females (paratypes). Salisbury, October 1, 1944, three males and five females (paratypes). All specimens were collected by Dr. Walter F. Jeffers.

Remarks.—This species differs from the other representatives of the subgenus *Barronopsis* Chamberlin and Ivie in the bifid tip of the embolus of the male palpus. There is a wide variation of size within the species.

Calymmaria cavicola (Banks)

Tegenaria cavicola Banks, Rept. Ind. Geol. Surv., 1896, Vol. XXI, p. 202.

Ecology.—This species has been taken under stones on a mountain side and on the ceiling of a cave in partial darkness.

Records.—Alleghany County, Dans Rock, April 7, 1944, two females. Loch Lynn, Sand Cave, April 8, 1944, one female.

THERIDIIDAE.

Conopistha nephilae (Taczanowski).

Argyrodes nephilae Taczanowski, Horae Soc. Entom. Ross., 1872, Vol. IX, p. 51.

Ecology.—One female was collected from woodland undergrowth by beating.

Record.—Darnestown, August 30, 1944, one female.

Dipoea buccalis Keyserling

Dipoea buccalis Keyserling, Spinnen Amerikas, Theridiidae, 1886, Vol. II, p. 42, pl. xii, fig. 157.

Ecology.—One male was taken by beating brush in open woodland.

Record.—Beltsville, August 31, 1944, one male.

Dipoea quinquemaculata (Banks)

Euryopsis quinquemaculata Banks, Can. Ent., 1900, Vol. 32, p. 97.

Ecology.—Young specimens have been sifted from hardwood litter.

Records.—College Park, March 25, 1943, one young pair. Berwyn, October 22, 1944, one young male.

Theridion ambitum Barrows.

Theridion ambitum Barrows, Ohio Jour. Sci., 1940, Vol. XL, No. 3, p. 132, fig. 5, 5a.

Ecology.—All specimens were found under stone or wood piles.

Records.—Cranberry, September 1, 1944, one male. Lanham, September 21, 1944, one male. Berwyn, September 23, 1944, one female.

Theridion intervallatum Emerton.

Theridion intervallatum Emerton, Trans. Conn. Acad. Sci., 1915, Vol. XX, p. 136, fig. 1-1c.

Ecology.—Two specimens were taken by sweeping in open woodland.

Records.—Berwyn, August 4, 1944, one female. Berwyn, September 3, 1944, one male.

Theridion reticulatum Muma.

Theridion reticulatum Muma, Amer. Mus. Novit., 1944, No. 1257, p. 7, figs. 9, 10.

Female	Length	Width
Cephalothorax.....	.60 mm.	.54 mm.
Abdomen.....	.90 mm.	.87 mm.
Over All.....	1.41 mms.	

Leg Formula 1423.

Measurements of first leg; femur .92 mm., patella .27 mm., tibia .74 mm., metatarsus .77 mm., tarsus .42 mm.; fourth leg, femur .79 mm., patella .27 mm. tibia .58 mm., metatarsus .62 mm., tarsus .36 mm.

Female similar to male in structure and color. All markings are more distinct especially the median longitudinal stripe on the cephalothorax and the dorsal abdominal folium. Chalky spots on the venter behind epigastric furrow larger in female. An additional pair of spots occur adjacent to the spinnerets on each side.

Abdomen globose.

Details of epigynum are shown in figure 10.

Ecology.—All specimens were taken by sweeping fields and open woodland.

Records.—Rutledge, October 5, 1943, one male by E. Beardsley. Salisbury, August 11, 1944, one female (allotype). Beltsville, August 26, 1944, one female (paratype).

Remarks.—The female of this small species is described here for the first time. One female is dark colored and appears closely related to or identical with *Theridion rabuni* Chamberlin and Ivie.

THOMISIDAE.

Philodromus montanus Bryant.

Philodromus montanus Bryant, Bull. Mus. Comp. Zool., 1933, Vol. LXIV, No. 6, p. 182, figs. 20, 26.

Ecology.—One male was collected under a stone.

Record.—Rush, May 21, 1942, one male.

GNAPHOSIDAE.

Drassyllus creolus Chamberlin and Gertsch.

Drassyllus creolus Chamberlin and Gertsch, Amer. Mus. Novit., 1940, No. 1068, p. 13, fig. 26, 27.

Ecology.—One female was found under a board.

Record.—Linkwood, May 25, 1944, one female.

Drassyllus fallens Chamberlin

Drassyllus fallens Chamberlin, Proc. Biol. Soc. Wash., 1922, Vol. XXII, p. 166.

Ecology.—One female was collected under trash.

Record.—Berwyn, July 23, 1937, one female by W. F. Jeffers.

Zelotes duplex Chamberlin.

Zelotes duplex Chamberlin, Proc. Biol. Soc. Wash., 1922, Vol. XXII, p. 164.

Ecology.—One female was taken by sifting leaves.

Record.—College Park, March 25, 1943, one female.

CLUBIONIDAE.

Castianeira alata n. sp.

	Male	Length	Width
Cephalothorax.....		2.4 mms.	1.6 mms.
Abdomen.....		2.6 mms.	1.4 mms.
Over All.....		5.0 mms.	

Leg Formula 4123.

Structure typical of genus.

Cephalothorax subovate, narrowed at head region. Clypeus more than three times diameter of anterior median eyes in height. Dorsum and sternum of cephalothorax dark reddish brown with the dorsum thinly

clothed with short white hairs. Chelicerae, labium and endites concolorous with cephalothorax. Palpi dark reddish brown except for light yellow distal end of tarsi. Details of palpal bulb shown in figure 11.

Both anterior and posterior eye rows procurved. Eyes subequal in size with those of the anterior row being slightly larger.

Legs moderately long and armed with stout spines. Anterior tibiae armed below 2-2-2 with distal spines weak. Anterior metatarsi 2-2-0. Measurements of first leg; femur 1.50 mms., patella .57 mm., tibia 1.35 mms., metatarsus 1.29 mms., tarsus .90 mm.; fourth leg, femur 1.92 mms., patella .75 mm., tibia 1.01 mms., metatarsus 2.10 mms., tarsus .96 mm. Femora of all legs dark reddish brown. Patellae, tibiae, metatarsi and tarsi of first and second legs light yellow. Patella, tibiae and metatarsus of third leg dusky, tarsus light yellow. Fourth leg dark except for tarsus, proximal end of patella and proximal and distal ends of tibia.

Abdomen elongate oval, widest behind the middle. Color of dorsum dark reddish brown, clothed with bands of easily rubbed white hairs as shown in figure 13. Venter lighter brown than dorsum and margined with a pair of light longitudinal stripes. Spinnerets concolorous with abdomen.

	Female	Length	Width
Cephalothorax.....		3.8 mms.	2.6 mms.
Abdomen.....		5.5 mms.	3.2 mms.
Over All.....		9.3 mms.	

Leg Formula 4132.

Color and structure of female similar to that of male.

Measurements of first leg; femur 1.95 mms., patella .81 mm., tibia 1.65 mms., metatarsi 1.50 mms., tarsi 1.05 mms.; fourth leg, femur 2.10 mms., patella .86 mm., tibia 2.16 mms., metatarsi 2.64 mms., tarsi 1.11 mms.

Details of epigynum are shown in figure 12.

Ecology.—Two specimens were found in a house; two under leaves on the ground,

Records.—College Park, June 14, 1943, one female by K. E. Muma (allotype). College Park, May 18, 1944, one young female by K. E. Muma (paratype). Berwyn, June 15, 1944, one male (holotype). Berwyn, October 10, 1944, one young female (paratype).

Remarks.—This species is quite closely related to *C. longipalpus* (Hentz). It may be easily distinguished by the distinctive abdominal markings. There are also slight differences in the palpus and epigynum.

Clubiona alachua Gertsch.

Clubiona alachua Gertsch, Amer. Mus. Novit., 1941, No. 1148, p. 4, fig. 4.

Ecology.—One female was collected from tall grass in an open field.

Record.—College Park, June 11, 1944, one female.

Clubiona johnsoni Gertsch.

Clubiona johnsoni Gertsch, Amer. Mus. Novit., 1941, No. 1148, p. 14, figs. 43, 44, 45.

Ecology.—One male was found under a stone.

Record.—Rush, May 28, 1944, one male.

Micaria quinquenotata Emerton.

Micaria quinquenotata Emerton, Trans. Conn. Acad. Sci., 1909, Vol. XIV, p. 215, Plate X, figs. 1-1e.

Ecology.—Specimens have been found running actively on the ocean beach.

Records.—Ocean City, July 9, 1944, one male and two females by W. F. Jeffers and M. H. Muma. Ocean City, July 18, 1944, one male by W. F. Jeffers.

Phrurolithus divinulus Gertsch.

Phrurolithus divinulus Gertsch, Amer. Mus. Novit., 1941, No. 1147, p. 6, figs. 7, 8, 9.

Ecology.—One male was taken under a stone.

Record.—Cumberland, September 16, 1943, one male.

Phrurolithus goodnighti n. sp.

	Female	Length	Width
Cephalothorax.....		.84 mm.	.81 mm.
Abdomen.....		1.17 mms.	.84 mm.
Over All.....		2.11 mms.	

Leg Formula 4123.

Structure typical.

Cephalothorax nearly circular in outline, narrowed slightly in head region. Color of dorsum dark reddish brown with a reticulation of dusky lines. Margins of cephalothorax black. Area enclosed by eyes black. Chelicerae, labium, endites and sternum yellowish brown. Sternum margined with black. Palpi dusky yellow. Cephalothorax clothed with scattered erect dark hairs and several spines on cephalothorax.

Eyes subequal in size. Anterior row procurved, posterior row straight. Clypeus slightly more than diameter of anterior laterals in height.

Legs moderately long, tibiae and metatarsi of first two legs armed below with long stout spines as follows: tibia 1(2-2-2-2-2), metatarsus 1(2-2-2-1), tibia 2(2-2-2-2), metatarsus 2(2-2-2-1). Legs light yellow and marked as follows: femora of first two legs darker at proximal ends and dusky on anterior and posterior faces; femur of third leg with dusky stripe on anterior and posterior face. Tibiae of third and fourth legs with dusky stripe on anterior face. Proximal ends of tibia of first two legs with dusky spots. Posterior proximal face of fourth femora dusky.

Leg measurements: first leg, femur .60 mm., patella .18 mm., tibia .48 mm., metatarsus .51 mm., tarsus .30 mm.; fourth leg, femur .66 mm., patella .21 mm., tibia .60 mm., metatarsus .66 mm., tarsus .42 mm.

Abdomen oblong and widest behind middle. Color dark grey marked with a light transverse basal band that is continuous with the light

venter, a light transverse wing-shaped band that is connected at the apex with the basal band, and several indistinct chevrons behind the middle. There are two white spots near the ends of the first chevron. Spinnerets light and encircled with dark grey. Abdomen clothed with pale prostrate hairs.

Epigynum as shown in figure 16.

	Male	Length	Width
Cephalothorax.....		.75 mm.	.69 mm.
Abdomen.....		.87 mm.	.57 mm.
Over All.....		1.62 mms.	

Similar in structure and color to female except that the eye area is concolorous with cephalothorax and the basal abdominal band is indistinct. Palpi as shown in figures 14 and 15.

Measurements of first leg: femur .60 mm., patella .18 mm., tibia .54 mm., metatarsus .45 mm., tarsus .30 mm.; fourth leg, femur .66 mm., patella .21 mm., tibia .54 mm., metatarsus .60 mm., tarsus .45 mm.

Ecology.—Specimens have been collected by sifting leaves.

Records.—Washington, D. C., May 1, 1924, one female (paratype), no collector. Gillespie, Illinois, August 15, 1941, one male and one female (male allotype, female paratype) by C. J. and M. L. Goodnight. Gillespie, Illinois, August 15, 1941, one female (female holotype) by C. J. and M. L. Goodnight. College Park, March 10, 1942, one female (paratype). Piatt City, Illinois, May 1943, three females (paratypes) by C. J. and M. L. Goodnight. Berwyn, March 26, 1944, one female (paratype) by W. F. Jeffers and M. H. Muma.

Remarks.—This species is closely related to *Phrurolithus similis* Banks and allied forms. It may be distinguished by details of the genitalia.

***Phrurolithus pipensis* n. sp.**

	Female	Length	Width
Cephalothorax.....		.86 mm.	.65 mm.
Abdomen.....		1.15 mms.	.72 mm.
Over All.....		1.90 mms.	

Leg Formula 4123.

Cephalothorax subcircular and narrowed at head region. Clypeus height little more than diameter of anterior lateral eyes. Eyes typical of genus. Cephalothorax yellowish brown marked with dusky radiating reticulations and seamed with black. Cephalothorax naked except for several spines on clypeus. Sternum, labium and endites light yellow, with chelicerae slightly darker. Face of each chelicera armed with a thin spine. Palpi light yellow, dusky on the sides of the femora, patellae and tibiae.

Legs moderately long. Armature of tibiae and metatarsi below of first two legs as follows: tibia 1(2-2-2-2-2), metatarsus 1(2-2-2-1), tibia 2(2-2-2-2-1), metatarsus 2(2-2-2-1).

Measurements of first leg: femur .72 mm., patella .29 mm., tibia .72

mm., metatarsus .63 mm., tarsus .42 mm.; fourth leg, femur .75 mm., patella .29 mm., tibia .66 mm., metatarsus .75 mm., tarsus .47 mm. Legs light yellowish brown. Femora of the first three legs marked with dusky bars on the sides.

Abdomen oblong, dark grey above and marked with a wide white chevron just in front of the middle. Behind the wide chevron are several obscure chevrons and there is a white spot just over the spinnerets. Venter white and immaculate except for a dark grey band continuous with the dorsal color that encloses the spinnerets. Spinnerets light yellow. Abdomen clothed with pale prostrate hairs.

Details of the epigynum are shown in figure 17.

Ecology.—One female was collected under a pile of logs.

Record.—Berwyn, September 10, 1944, one female (holotype).

Remarks.—The distinctive epigynum of this species distinguishes it from all other members of the genus.

Phrurotimpus subtropicus Ivie and Barrows.

Phrurotimpus subtropicus Ivie and Barrows, Bull. Univ. Utah, 1935, Vol. 26, No. 6, p. 24, fig. 66.

Ecology.—One female was found under a stone.

Record.—Cumberland, September 16, 1943, one female.

Phrurotimpus certus Gertsch.

Phrurotimpus certus Gertsch, Amer. Mus. Novit., 1941, No. 1147, p. 17, figs. 47, 48.

Ecology.—Cumberland, September 16, 1943, one female.

Record.—One female was found under a stone.

SALTICIDAE.

Icius formicarius Emerton.

Icius formicarius Emerton, Trans. Conn. Acad. Sci., 1891, Vol. VIII, p. 235, pl. xviii, fig. 6.

Ecology.—Two females were collected from foliage.

Records.—Keedysville, June 29, 1944, one female by W. F. Jeffers, Beltsville, August 26, 1944, one female.

HAHNIIDAE.

Neoantistea gertschi n. sp.

	Female	Length	Width
Cephalothorax.....		1.1 mms.	.9 mm.
Abdomen.....		1.5 mms.	1.0 mms.
Over All.....		2.4 mms.	"

Leg Formula 4123.

Measurements of first leg: femur .84 mm., patella .33 mm., tibia .66 mm., metatarsus .51 mm., tarsus .45 mm.; fourth leg, femur .90 mm., patella .33 mm., tibia .75 mm., metatarsus .84 mm., tarsus .51 mm.

This species is almost identical in structure and coloration with *N.*

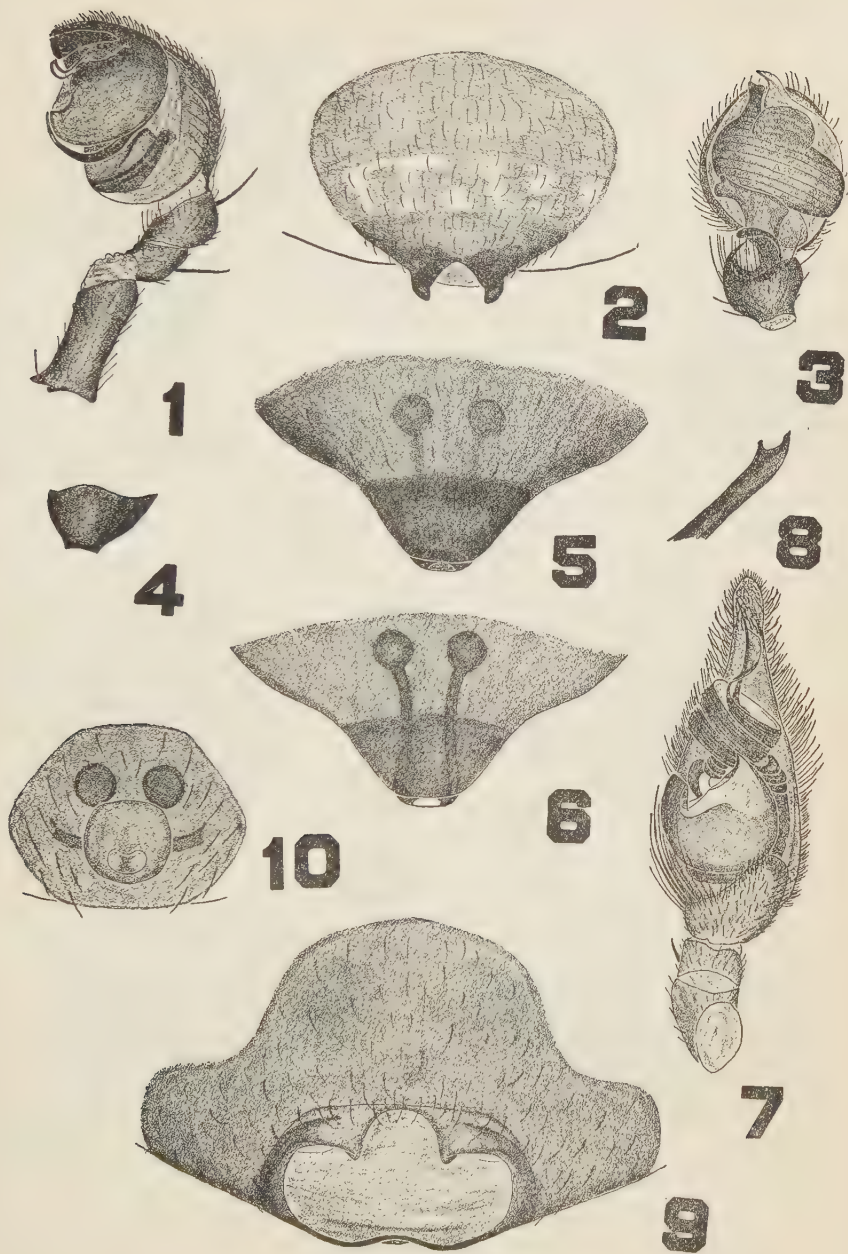
agilis Keyserling. It may be separated from the latter by differences in the details of the epigynum. Figure 18 shows the epigynum from below; figure 19 shows the epigynum from below after clearing in dioxan and clove oil.

Ecology.—Most of the specimens were sifted from leaves or moss in moist woodland. One female was found under a board.

Records.—Berwyn, September 23, 1944, one female (holotype). Berwyn October 28, 1944, one female (paratype) by W. F. Jeffers and M. H. Muma. College Park, March 10, 1942, one female (paratype). Branchville, October 22, 1941, one female (paratype). Salisbury, May 8, 1944, one female (paratype) by W. F. Jeffers.

EXPLANATION OF FIGURES.

1. *Uloborus octonarius* n. sp.—Lateral view of left palpus.
2. *Uloborus octonarius* n. sp.—Ventral view of epigynum.
3. *Sciastes mossi* n. sp.—Ventral view of right palpus.
4. *Sciastes mossi* n. sp.—Dorso-lateral view of tibia of right palpus.
5. *Sciastes mossi* n. sp.—Ventral view of uncleared epigynum.
6. *Sciastes mossi* n. sp.—Ventral view of cleared epigynum.
7. *Agelenopsis jeffersi* n. sp.—Ventral view of right palpus.
8. *Agelenopsis jeffersi* n. sp.—Latero-ventral view of tip of embolus.
9. *Agelenopsis jeffersi* n. sp.—Ventral view of epigynum.
10. *Theridion reticulateum* Muma—Ventral view of epigynum.
11. *Castianeira alata* n. sp.—Ventral view of bulb of right palpus.
12. *Castianeira alata* n. sp.—Ventral view of epigynum.
13. *Castianeira alata* n. sp.—Dorsal view of male.
14. *Phrurolithus goodnighti* n. sp.—Lateral view of left palpus.
15. *Phrurolithus goodnighti* n. sp.—Ventral view of tibia of palpus.
16. *Phrurolithus goodnighti* n. sp.—Ventral view of epigynum.
17. *Phrurolithus pipensis* n. sp.—Ventral view of epigynum.
18. *Neoantistea gertschi* n. sp.—Ventral view of uncleared epigynum.
19. *Neoantistea gertschi* n. sp.—Ventral view of cleared epigynum.





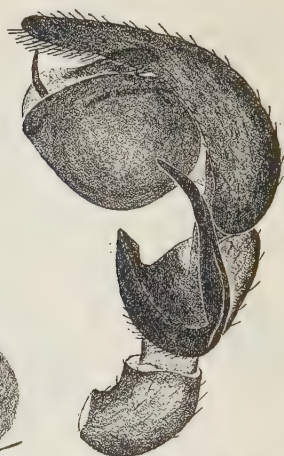
11



15



12



14



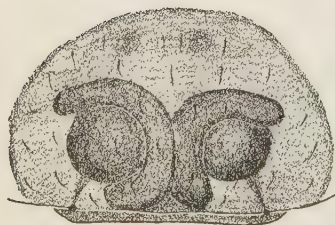
17



13



16



18



19



PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW CACOMISTLE FROM GUERRERO.

BY E. A. GOLDMAN.

The range of the cacomistles of the genus *Bassariscus* is confined in Mexico mainly to the high interior plateau, extending down into the upper part of the Tropical Zone along the slopes of the mountains. The genus appears to be absent in the tropical lowlands. A single specimen from the Sierra Madre del Sur of Guerrero presents characters beyond the usual range of individual variation and seems to represent a new race south of a barrier formed by the low broad valley of the Rio Balsas. For the privilege of describing this animal I am indebted to Mr. Benjamin P. Bole and Dr. Harry C. Overholser, of the Cleveland Museum of Natural History.

The names of colors in quotation marks are from Ridgway's "Color Standards and Nomenclature", 1912.

Bassariscus astutus bole, subsp. nov.

Guerrero Cacomistle.

Type locality.—Chilpancingo, Guerrero, Mexico.

Type specimen.—Male adult, skin and skull; Cleveland Museum of Natural History; collected by W. W. Brown, February 16, 1940; field number, 551.

Distribution.—Known only from the type locality on the slope of the Sierra Madre del Sur of Guerrero.

General characters.—A small, pale grayish subspecies with light dentition. Most closely allied to *Bassariscus astutus consitus* of Michoacan, but color paler and grayer, the back less profusely overlaid with black, and the hind feet whiter; cranial details, especially lighter dentition, distinctive. Similar in general to *Bassariscus astutus astutus* of the vicinity of the Valley of Mexico, but smaller, and differing otherwise in about the same characters as from *consitus*.

Color.—*Type*: Ground color of upper parts in general pale gray, the

top of head, middle of neck and back thinly overlaid with black, the dark hairs thinning out along sides and over thighs; sides, and rump suffused with "pale pinkish buff"; face with the usual light and dark markings, the sides of muzzle blackish confluent with blackish orbital rings and small black areas at base of supraorbital vibrissae, in contrast with white patches above and below eyes; lips and chin white; throat, inner sides of limbs and under parts in general buffy white, except irregular patches across abdomen where the under color is "pale smoke gray", showing through indistinctly; ears blackish on basal half externally, becoming whitish toward tips, and thinly clothed with whitish hairs internally; outer sides of forearms mixed buffy grayish and dusky; fore feet whitish; hind feet blackish along outer sides, becoming white on toes; tail with seven alternating white and black rings and a black tip, the white rings confluent along the median line below.

Skull.—Similar in size and general proportions to that of *consitus*, but interorbital region narrower; auditory bullae flatter, less inflated and projecting below level of basioccipital; dentition lighter, maxillary tooth-row shorter, the individual teeth distinctly smaller. Compared with that of typical *astutus* the skull is decidedly smaller and differs in about the same structural details as from *consitus*.

Measurements.—*Type*: Total length, 850 mm.; tail vertebrae, 420; hind foot, 80. *Skull* (type): Greatest length, 84.8; condylobasal length, 84.5; zygomatic breadth, 56.5; breadth of rostrum (over root of canine), 16.7; interorbital breadth, 16; maxillary toothrow (alveoli), 31.7; upper carnassial, crown length (outer side), 7, crown width, 5.1.

Remarks.—*B. a. bolei* appears to be most closely allied to *consitus*, but probably intergrades directly with typical *astutus* to the eastward in southern Puebla and northern Oaxaca. It represents an extension of the known range of the group toward the southwest. The subspecies is named for Mr. Bole in recognition of his interest in the mammals of Middle America.

Specimens examined.—One, the type.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW *EPTESICUS* FROM JAMAICA

BY H. HAROLD SHAMEL,

A series of 27 *Eptesicus* collected on the Island of Jamaica, July 11, 1932, and preserved in alcohol apparently represent a new species.

Eptesicus lynni sp. nov.

Type.—Adult female in alcohol, with skull removed, No. 258488, U. S. National Museum; collected July 11, 1932, by W. Gardner Lynn. Original number B25.

Type locality.—A cave east of Montego Bay, Jamaica.

Diagnostic characters.—Color rich reddish brown with the underparts of the same hue but paler. Occasional light individuals are either entirely pale flaxen or this paler color may be present as spots on red individuals. It is distinguished from other West Indian *Eptesicus* by having a smaller skull and in this respect agrees with the *brasiliensis* group occurring in South and Central America.

Color.—The color is more reddish brown than *E. fuscus*. The under surface of body is the same color as the back but paler. Membranes dark brown throughout. The fur of the back is unicolor to its base. There are two color phases. The typical phase is reddish brown and the other phase is a much paler brown which grades into a pale flaxen, almost white in certain individuals. Of 8 specimens taken from alcohol and dried, two were typical, one was typical except for a light spot on shoulder and breast and 5 were paler, from pale brown to pale flaxen. In some of the pale individuals the coloration of the belly is similar to that of the red form.

Measurements.—Type: head and body, 55.0; tail, 36.0; forearm, 44.5; tibia, 16.1; foot, 9.5; ear from notch, 13.0. Skull: greatest length, 16.8; condylobasal length, 15.0; interorbital constriction, 4.2; breadth of braincase, 8.0; depth of brain case, 6.5; upper tooth row, c-m¹, 6.0; lower row, 3-mm, 6.2.

Specimens examined.—27, all in alcohol including the type.

Remarks.—This bat from Jamaica is the only form in the West Indies that belongs to that group of *Eptesicus* which I designate as the *brasiliensis* group, and which is restricted mainly to Central and South America. The other forms of *Eptesicus* in the West Indies belong to the *fuscus* group of North America.

In studying this bat I have examined and compared the *Eptesicus* specimens from Central and South America and the West Indies in the U. S. National Museum collection. I find that this genus may be divided into three groups: first, the *fuscus* group comprising the large *Eptesicus* of North America, the West Indies and northern South America as far as Merida, Venezuela (*E. fuscus pelliceus*). In the West Indies members of this group are found in Cuba, Dominican Republic and Haiti, the Bahama Islands and Puerto Rico. The second is the *brasiliensis* group to which most of the South and Central American forms belong. The third section, which may be known as the *diminutus* group contains three species and is confined to South America. I have seen no specimens of the species referred to this group.

The skull of the *fuscus* group is distinguished from the skull of the *brasiliensis* group, by its larger size, and furthermore, the apex of the second triangle of the third upper molar is less than half the height of the anterior side of the first triangle. In the *brasiliensis* group the skull is smaller and the apex of the second triangle is at least half the height of the anterior side of the first triangle.

I take pleasure in naming this bat after the collector W. Gardner Lynn.

The groups are characterized as follows:

1. *fuscus* group: greatest length of skull, 17.6-21.2; greatest breadth of brain case, 8.6-9.6; forearm, 46.0-50.2. Members of this group range from Southern Canada to Venezuela (*Eptesicus fuscus pelliceus*) in South America. It is the dominant group in the West Indies.

Eptesicus fuscus (Beauvois) 1796 (including all the subspecific forms of North, Central and South America)—forearm, 46.0-50.2

Eptesicus fuscus cubensis (Gray) 1837—forearm, 46.0-48.2 Cuba

Eptesicus fuscus bahamensis (Miller) 1897—forearm, 44.0-46.2 Bahamas: New Providence.

Eptesicus fuscus hispanolae (Miller) 1918—forearm, 46.5 Dominican Republic: Constanza

Eptesicus fuscus wetmorei (Jackson) 1916—forearm, 46.0 Puerto Rico: Maricao

2. *brasiliensis* group: greatest length of skull, 15.6-17.3; greatest breadth of brain case, 7.2-8.2; forearm, 27.5-48.5. Widely distributed in South America, Central America, and Mexico as far north as Tabasco, Campeche and Yucatan; the Island of Jamaica.

Eptesicus brasiliensis (Desmarest) 1819—forearm, 40.6 Brazil

Eptesicus propinquus (Peters) 1872—forearms 39.0-41.2 Guatemala: Santa Isabel.

Eptesicus furinalis (d'Orbigny and Germais) 1847—forearm, 39.0-41.2. Argentina: Corrientes

Eptesicus andinus J. A. Allen 1914—forearm, 39.0-42.5 Colombia: Valle de las Papas, Central Andes, Huila

Eptesicus chiriquinus Thomas 1920—forearm, 45.5 Panama: Boquete, Chiriqui

Eptesicus montosus Thomas 1920—forearm, 43.0 Bolivia (highlands): Choro, north of Cochabamba

- Eptesicus chapmani* J. A. Allen 1915—forearm 39.0–40.0 Brazil: Lower Rio
- Eptesicus inca* Thomas 1920—forearm 46.0 Peru: Cuzco
- Eptesicus argentinus* Thomas 1920—forearm, 43.0–45.5 Argentina: (open country, pale representative of *brasiliensis*)
- Eptesicus innoxius* (Gervais) 1841—forearm, 37.5–39.0 N. W. Peru: Amotape, Piura.
- Eptesicus lynni* Shamel 1945—forearm, 44.5–48.5 Jamaica: Montego Bay
- Eptesicus melanopterus* (Jentink) 1904—forearm, 39.0–40.0 Dutch Guiana: Surinam, Paramaribo. (Probably the same as *V. auripendulus* shaw 1800 from Cayene, French Guiana, through Shaw's description is not adequate for specific identification.)
- Eptesicus auripendulus* (Shaw) 1800—forearm, no measurements French Guiana: Cayenne
- Eptesicus magellanicus* (Philippi) 1866—forearm, 44.5 Straits of Magellan.
- Eptesicus chiralensis* Anthony 1926—forearm, 39.9–41.0 Ecuador: Prov. del Oro
- Eptesicus hilarii* (Is. Geoffroy) 1824—forearm 36.8 Inhabits "la capitainerie de Goyar et la province des Missions" (Goyaz, Brazil?, and Misiones, northeast Argentina).
3. *diminutus* group: greatest length of skull, 13.9–14.1; greatest breadth of brain case, 7.1–7.3; forearm, 34.0–35.7. Restricted to South America.
- Eptesicus punicus* Thomas 1920—forearm, 35.0 Ecuador: Puna Island, Gulf of Guayaquil
- Eptesicus fidelis* Thomas 1920—forearm, 34.0
- Eptesicus diminutus* Osgood 1915—forearm, 35.7 Brazil: Rio Preto, Bahia



PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW BLIND SNAKE (*TYPHLOPS TOVELLI*) FROM
DARWIN, AUSTRALIA.

BY ARTHUR LOVERIDGE.

Among those who have taken advantage of the opportunity afforded by world conditions to extend our knowledge of the fauna in distant places, is Gunner G. T. R. Tovell of the Australian Forces. At the conclusion of hostilities it is hoped to publish a full report on the material he has so generously contributed. The present paper deals only with an addition to the Australian herpetofauna, with which I am glad to associate the discoverer's name by calling it

Typhlops toveli sp. nov.

Type.—Museum of Comparative Zoology, No. 48,844, from Koonawarra Sports Ground, about five miles south of Darwin, Northern Territory, Australia, collected by G. T. R. Tovell, 1944.

Paratype.—Museum of Comparative Zoology, No. 48,845 with same data as the type.

Diagnosis.—Closely related to *T. broomi* Boulenger, of Muldiva, northeast Queensland, of which it may be a subspecies, as it differs only from the description of *broomi* in its semidivided (*not* divided labial). It has less in common with *T. diversus* Waite, of Mowen, Queensland, whose body diameter is included 67 times in total length.

Description.—Snout rounded, moderately projecting; rostral nearly half the width of the head, extending almost to the level of the eyes; nostrils lateral; nasal *semidivided*, the cleft proceeding from the preocular; preocular narrower than the nasal or ocular, in contact with the second and third labials; eyes distinct; upper head scales distinctly enlarged; upper labials 4. Midbody scales in 20 rows; body diameter 40 (36 in paratype) times in total length; tail as long as broad, ending in a point.

Color.—Above, brown, the center of each scale darker and resulting in a series of lines. Below, pure white, the junction with the darker dorsal coloring very irregular.

Size.—Total length of type, 122 (118.5+3.5) mm., of paratype, 73 (70.5+2.5) mm., their diameters being 3 and 2 mm. respectively.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW BIRDS FROM THE UPPER RIO NEGRO,
BRAZIL.

BY HERBERT FRIEDMANN *

1. A new Barbet of the *Capito auratus* group.

Chapman's paper on "Mutation in *Capito auratus*" (Amer. Mus. Novit. no. 335, 1928) brought out very clearly the fact that the color variations distinguishing the numerous races of this bird were geographically so interspersed as to suggest very strongly a mutational rather than a gradual, cumulative, environmentally induced origin for the various subspecies. Study of the barbets collected by the National Geographic Society's expeditions to the Brazilian-Venezuelan border reveals still another, hitherto undescribed, race of this highly plastic species, and one whose characters bear out the mutational origin suggested by Chapman. It is one of the scarlet-throated races but comes from the upper Rio Negro, geographically between two yellow-throated forms—*aurantiicinctus* to the north of it, and *hypochondriacus* to the south of it. It may be known as

Capito auratus transilens, subsp. nov.

Type: U. S. Nat. Mus. 326032, adult ♂, collected at Santa Isabel, Rio Negro, Amazonas, Brazil, October 16, 1930, by E. G. Holt, E. R. Blake, and C. T. Agostini.

Subspecific characters: male similar to that of *Capito auratus amazonicus* (nearer to this form than to any other of the species) from Tefe, on the Amazon, but differs from it by having the forehead and crown more streaked and suffused with ochraceous orange to xanthine orange, less yellowish, and with the two large yellowish stripes on the interscapulars and upper back primuline to light cadmium yellow, as opposed to strontian to lemon yellow in *amazonicus*, and with the sides and flanks more

*Published by permission of the Secretary of the Smithsonian Institution.

heavily flecked with blackish. Female very similar to that of *C. a. amazonicus* but with the forehead and crown very slightly more orange, less yellow, the margins of the lesser upper wing coverts darker—bright cinnamon rufous instead of zinc orange. Females of the two forms are not different enough to warrant separation; the race is based on the plumage characters of the male.

Measurements: Four males—wings 82–83 (type 82.2); tail 47.2–50.5 (type 50.5); culmen from base 23–23.5 (type 23); tarsus 23.5–24 (type 23.5 mm.). One female—wing 84, tail 50, culmen from base 23.7; tarsus 22.4 mm. Two males of *C. a. amazonicus* have the following dimensions—wing 81–84; tail 46.2–49; culmen from base 22.3–22.8; tarsus 22.3–23 mm.; two females—wing 82–83; tail 47.4–50; culmen from base 22.6–23; tarsus 22.5–22.8 mm.

Chapman (loc. cit. p. 5–6) writes that his series of topotypical *auratus* from the Ucayali, “. . . . varies more widely than any other seen. With the exception of females from Tonantins (*C. a. nitidior*) every other red-throated race can be matched, or nearly matched, by this Sarayacu series” It would seem from this that the species is still unstable in its characters in the terra typica of its nominate form. No such variability is present in the present series from the upper Rio Negro, and it may be that some of the apparent variability of the Ucayali *auratus* may be an approach to the contiguous race *C. a. novaolindae*.

I am indebted to Dr. John T. Zimmer of the American Museum of Natural History for the loan of specimens of *C. a. amazonicus* in the present connection. I have also examined material of the following races in this study—*aurantiicinctus*, *insperatus*, *punctatus* and *novaolindae*.

2. The Geographic Races of the Golden-winged Paroquet, *Brotogeris chrysopterus* (Linnaeus).

A study of the geographic variations of the little golden-winged paroquet, *Brotogeris chrysopterus*, reveals that in addition to the four forms currently recognized, there is a fifth one inhabiting the basin of the Rio Negro. This one may be known as

Brotogeris chrysopterus tenuifrons subsp. nov.

Type: U. S. Nat. Mus. 325937, ad. ♂, collected at Santa Isabel, Rio Negro, Amazonas, Brazil, October 13, 1930, by E. G. Holt, E. R. Blake, and C. T. Agostini; original no. 3808.

Subspecific characters: agrees with *B. c. tuipara* of the south bank of the lower Amazon in having the chin spot orange (not brownish as in the nominate form) but differs from that race in having practically no frontal band and what little there is, is not orange (as in *tuipara*) but brownish, almost as in *chrysopterus*. (The fourth race, *chrysosema* of the Rio

Madeira and Matto Grosso, has a broad light yellow frontal band). In other words, *tenuifrons* resembles *tuipara* below and *chrysopterus* above. From the description of *solimoensis* it differs in having the chin spot brighter, as in *tuipara*, and appears to be a smaller bird as well.

Description of type: narrow frontal fringe cinnamon brown; crown and occiput between porcelain green and deep porcelain green; nape, interscapulars, back, lower back between grass green and cedar green, paling on rump, upper tail coverts, scapulars, and inner lesser and median upper wing coverts to spinach green; outer lesser and median upper wing coverts grass green suffused, especially on their inner webs with dark bluish; outer greater upper wing coverts capucine yellow to orange, edged and tipped with light cadmium; remiges dark blackish blue edged and tipped with dark yellowish green; median pair of retrices dark yellowish green, the lateral ones similar on their outer webs but pyrite yellow to warbler green on their inner webs; lores, cheeks and auriculars grass green slightly tinged with porcelain green; chin between orange and orange rufous; sides of throat, of breast, and sides and flanks of body pale grass green paling to cource green on the mid-throat and upper breast, and to grass green with a slight yellow-green tinge on the abdomen, vent, thighs, and under tail coverts; under wing coverts bright grass green; under surface of remiges largely dusky squill blue.

Measurements of type: wing 109.2, tail 59.2; culmen from cere 17.2 mm. Two other males measure—wing 107.2–109.8; tail 52+ —59.1; culmen from cere 16.3–16.5; while one female—wing 111, tail 56.8, culmen from cere 16 mm. There is no appreciable difference in dimensions between *tenuifrons* and *chrysopterus*. The race *tuipara* has slightly longer wings (113–119 mm.) in the material examined.

Range: known only from the Upper Rio Negro (Santa Isabel, and at the mouth of the Rio Cauabury).

Material examined: *B. c. chrysopterus* 5 from British Guiana; *B. c. tuipara* 2 from lower Amazonia; *B. c. chrysosema* 1 from Bolivia; *B. c. tenuifrons* 4 from the Upper Rio Negro.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE GENUS NYCTIPROGNE.

BY HERBERT FRIEDMANN *

The genus *Nyctiprogne* was established by Bonaparte in 1854 for the species *leucopyga* and has been considered as a monotypic group ever since. The very small bill with somewhat concealed nostrils is the criterion of the genus. Study of new and more extensive material of this group, always rather uncommon in collections, reveals that it contains not one but at least three forms, two of which are herein described for the first time. The characters of these forms, especially when taken into consideration along with their geographic occurrence indicates that for the present, at least until more data are forthcoming, it may be advisable to consider them as of two distinct, but obviously related, species. We may start with the one already known, the one called in books "small-billed nighthawk" *Nyctiprogne leucopyga* (Spix) which ranges from the Orinoco eastward to Cayenne and southward to southwestern Matto Grosso. To date no one has attempted to divide it into local races, but a study of a series from the extreme upper Orinoco and the northern Brazo Casiquiare reveals that the birds of that area are darker and smaller than examples from the Amazon River and also have the remiges less extensively freckled externally. Inasmuch as the type locality of *leucopyga* is the "wooded shores of the Amazon" it follows that that smaller, darker Venezuelan population is the one that needs a name. It is proposed to call it

Nyctiprogne leucopyga exigua subsp. nov.

Type: U. S. Nat. Mus. 328356, adult ♂ in breeding condition, col-

*Published by permission of the Secretary of the Smithsonian Institution,

lected on the right bank of the Upper Orinoco opposite Corocoro Island, Venezuela, May 12, 1931, by E. G. Holt, E. R. Blake, and C. T. Agostini.

Subspecific characters: similar to *N. l. leucopyga* of the Amazon River but smaller (wings 128.2–136.4 as against 139–142 mm.) and darker, the upper parts with the blackish marks larger, and with the pale buffy marks on the outer webs of the remiges and rectrices much reduced in size and frequency.

Measurements: 3 males, including the type, wing 131–136.4 (132.8); tail 83.1–84.1 (83.3 mm.); 1 female—wing 128.2, tail 83.1 mm. (an unsexed *N. l. leucopyga* has a wing 142; tail 93 mm.; another example marked “♂ [♀]” wing 139; tail 86.4 mm.).

Range: the upper stretches of the Rio Orinoco (opposite Corocoro Island) south to the northern part of the Brazo Casiquiare (at the mouth of the Rio Pacila), extreme southern Venezuela.

Just to the south of the range of *N. l. exigua*, along the more southern stretches of the Brazo Casiquiare, is another population of which I have seen a good series of specimens. As far as known there are no barriers to effect any spatial isolation between these birds and *exigua* and it may well be that future collecting will find their ranges to overlap. It is partly for this reason, and partly because of the number of characters by which it differs from *N. leucopyga* and also because it looks as though it should be an extreme variant of that species but is geographically in between typical *leucopyga* and *exigua*, that I provisionally treat it as a distinct species. It is, admittedly, close to *N. leucopyga*. This bird may be known as

Nyctiprogne latifascia sp. nov.

Type: U. S. Nat. Mus. 326844, ad. ♂ in breeding condition, collected at Raudal Quirabuena, Brazo Casiquiare, Venezuela, February 5, 1931, by E. G. Holt, E. R. Blake, and C. T. Agostini.

Specific characters: similar to *N. leucopyga exigua* in size (very slightly larger, the females more noticeably so) but the remiges and rectrices with no buffy transverse marks on their outer webs, the dark terminal area of the tail (from the white band to the tip of the tail) much broader (47–51 as opposed to 30–40 mm. in *exigua*), and coloration above and below much darker, more blackish, less vermiculated with tawny buff, the crown, occiput, and upper back practically solid fuscous black.

Description of type: forehead, lores, crown, and occiput fuscous black; nape similar but the feathers with faint, very small and narrow tips and sparse transverse frecklings of Dresden brown; interscapulars and upper back like the nape but with fewer of the pale markings; scapulars dark fuscous black (almost black) externally edged with pale cinnamon buff; upper wing coverts fuscous black, the median and greater ones with small terminal spots of cinnamon buff; primaries and outer secondaries between clove brown and fuscous, paler basally along the outer margins of the inner webs, the inner secondaries transversely flecked and incompletely barred with pale buffy grayish; lower back like the upper back; upper tail coverts fuscous black; rectrices fuscous black, crossed by a broad

band of white (the white band about 10–12 mm. wide) about 50 mm. from the tips of the feathers; chin, throat, cheeks, auriculars, and breast fuscous black the feathers tipped and transversely flecked with pale ochraceous tawny; abdomen, sides, and flanks fuscous black barred with white, the white bars narrower than the blackish interspaces and sometimes tinged with buffy; under tail coverts similar but with the pale bars wider, usually not narrower than the dark interspaces; under wing coverts fuscous black barred with whitish; wing 134, tail 91.8; width of terminal tail band 47.1 mm.

Measurements: 5 ♂s including the type—wing 133–137.4 (134.7); tail 87.4–95.9; width of terminal tail band 47.1–51 (49.1 mm.); 2 ♀—wing 135.2–137.1; tail 83–93.4; width of terminal tail band 47.5–50 mm.

Range: known only from extreme southern Venezuela, from San Carlos on the uppermost reaches of the Rio Negro to Raudal Quirabuena on the Brazo Casiquiare. As stated above the distinction between the ranges of *latifascia* and of *exigua* is hard to account for except by the accident of collecting. I know of no other bird whose range terminates anywhere along the Casiquiare only to have another closely related form “take up” where it leaves off. It is for this reason that I suspect that eventually *N. leucopyga exigua* and *N. latifascia* may be found together, and this, in turn, necessitates treating the latter as a species.

It may be pointed out that there may be still another undescribed subspecies of *N. leucopyga* in the southern part of its range. Thus, Naumburg (Bull. Amer. Mus. Nat. Hist., lx, 1930, p. 138) writes of a specimen from Villa Bella de Matto Grosso as “remarkably large but not otherwise different,” from Amazonian examples.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW PHILIPPINE RODENTS.

BY REMINGTON KELLOGG*

Two apparently undescribed rodents are included in a collection of mammals recently submitted to the U. S. National Museum for identification. These are characterized as follows:

Rattus rattus umbriventer, subsp. nov.

Type locality.—1 mile southwest of Progreso, Mindoro Island, Philippine Islands. Altitude about 20 feet.

Type specimen.—Male adult, skin and skull; No. 277675, U. S. National Museum; collected May 31, 1945, by Arthur L. Gordon; original number 69.

Distribution.—Known only from southeastern Mindoro Island.

General characters.—Mammae, 2-3 = 10. Pelage of upperparts not harsh and rather thick. Tail in adults equal to or slightly shorter than head and body. Rows of scales on tail 8 to 9 per 10 mm. Hind foot (c.u.) equivalent to about 18.2 to 22.8 percent of head and body length. Palate extending behind M^3 . Teeth like other members of *Rattus rattus* section, well cusped. M^1 with five roots. M^3 not strongly reduced. Upper molar row equivalent to about 17 to 18 percent of condylobasal length. Bullae about 18 percent of occipito-nasal length.

Color (Terms after Ridgway, Color Standards and Color Nomenclature, 1912.).—Light ticking of upperparts rather conspicuous, resulting from the intermixture of hairs with light colored bands and unicolored black overhairs, and the showing through in the median dorsal region of the blackish plumbeous basal portions of the hairs. Dark tipped hairs of black and sides have a 3 to 7 mm. light buff to cinnamon buff subapical band, which on the sides is often lighter than in mid-dorsal region. Hairs on chin and throat white to base. Hairs on underparts in front of fore legs dusky basally but with whitish tips. On each side in pectoral region is a white area on which the hairs are white to base as are also the hairs on inside of fore limbs to wrists. Hairs on remainder of underparts,

* Published by Permission of the Secretary of The Smithsonian Institution.

with exception of inguinal region, dusky at base with whitish or ivory yellow tips. Hairs on inguinal region lighter, some white to base. Hairs on fore and hind feet near deep mouse gray basally and with whitish tips, but often darker on median metapodials; ends of toes white. Tail unicolored, dark to tip.

Pelage.—Hair on upperparts not harsh. Black overhairs on upperparts about 25 to 30 mm. in length. Hair on underparts soft. Hair on fore and hind feet short, 2.5 to 3 mm. in length. Tail moderately haired, the majority of the bristles as long as or only slightly shorter than the length of two scales. Tail with 8 to 9 rows of scales per 10 mm. Ears blackish, sparsely covered with short hairs externally and about 23 mm. in length from notch (alcoholic specimen).

Skull.—Similar to that of *Rattus rattus mindanensis*, but interpterygoid fossa and interorbital constriction narrower. Supraorbital ridges distinct, extending backward from interorbital constriction along orbital borders of frontals and lateral surfaces of parietals to or beyond level of squamosal-parietal suture. Anterior edge of zygomatic plate (external to infraorbital foramen) essentially the same as in *mindanensis*. Bullae narrow, moderately inflated and about 18 percent of occipito-nasal length. Incisive foramina elongated, extending backward behind level of front of anterior root of M¹ and moderately widened behind the middle. A minute antero-external cusplet present on M² and M³ in about half the specimens. M³ varying from 1.8 to 2 mm. in length. Upper incisors smooth, rounded in front, and retroflected to the same extent as in *mindanensis*.

Measurements.—*Type*: Total length, 422 mm.; tail, 211; hind foot, 40. Five male topotypes, respectively: Total length, 409, 398, 374, 372, 366; tail, 195, 197, 190, 184, 178; hind foot, 39, 38, 38, 38, 37.

Skull (type): Occipito-nasal length, 40.9; condylobasal length, 40.2; zygomatic width, 20.85; interorbital width, 5.45; length of nasals, 13.85; palatilar length, 20.2; incisive foramina, 7.9; length of bulla, 7.8; length of upper molar row, 7.4; length of mandible, 24.5. Five male topotypes, respectively: Occipito-nasal length, 42.3, 42.4, 39.6, 39.3, 39.4; condylobasal length, 41.4, 41.1, 38.7, 39.3, 38.75; zygomatic width, 20.9, 21.1, 19.8, 20.2, 20.2; interorbital width, 5.85, 5.6, 5.5, 5.8, 5.2; length of nasals, 15.1, 14.4, 13.85, 13.8, 13.6; palatilar length, 20.2, 20, 19.4, 19.5, 19.25; incisive foramina, 8.5, 8.0, 8.15, 7.6, 7.8; length of bulla, 8.0, 8.0, 7.4, 7.85, 7.3; length of upper molar row, 7.25, 7.35, 6.9, 7.2, 7.1; length of mandible, 24.15, 24.3, 24.6, 24.6, 23.

Remarks.—This rat is readily distinguished from other rats in this section of the genus by the coarse ticking of the upperparts and the color pattern of the underparts. A similar distribution of light and dark areas on the underparts occurs occasionally in other members of the *Rattus rattus* section.

Specimens examined.—Total number, 29, all from Mindoro Island, as follows: Progresso, 17; San Jose, 12.

Chrotomys whiteheadi mindorensis, subsp. nov.

Type locality.—3 miles south-southeast of San Jose (Central), Mindoro Island, Philippine Islands. Altitude, 200 feet.

Type specimen.—Male adult, skin and skull; No. 277639, U. S. National Museum; collected May 7, 1945, by Robert M. Roecker; original number 54.

Distribution.—Known only from type locality.

General characters.—Upperparts characterized by two black stripes and a prominent pinkish-cinnamon stripe which extend forward to forehead; muzzle long; ears medium; pollex with a short rounded nail; other digits, including hallux, with well-developed, little curved claws. Skull differs from typical race *whiteheadi* by having a slightly longer upper molar row (5.7 mm. as compared to 5.1, 5.2 and 5.3, respectively, for three specimens of *whiteheadi*), the posterior palatine foramina extend forward beyond level of the transverse maxillo-palatine suture, and M^3 is larger (0.8×1.1 as compared to 0.6×0.75 and 0.6×0.8 for two specimens of *whiteheadi*).

Color (Terms after Ridgway, Color Standards and Color Nomenclature, 1912).—Ground color of sides and adjacent portion of back tawny-olive. A well defined pinkish-cinnamon longitudinal median stripe extending from middle of face nearly to base of tail, bordered on each side by a blackish stripe of varying width. The black stripes merge anteriorly at about middle of face with black nose and extending backward through eyes and internal to ears are attenuated posteriorly at hinder end of longitudinal median light stripe; black stripes rather sharply delimited posteriorly and not merging imperceptibly into ground color above base of tail; sides of face and below eyes slightly lighter in tone than sides. Undersurface slaty-buff, not sharply defined from sides; upper surfaces of fore and hind feet tawny-olive, but digits are lighter. Tail blackish above and paler below.

Pelage.—Fur on upperparts soft, thick and straight; underparts less densely haired. Hairs on fore and hind feet short. Tail relatively short, well haired, the longest bristles slightly longer than the length of three scales; 21 rows of scales per 10 mm. Ears dark brown, sparsely covered with short dark hairs externally, those on margins of ears whitish.

Skull.—Rostrum elongated; nasals wider anteriorly and projecting farther forward than in *whiteheadi*; infraorbital foramen narrow, not noticeably widened dorsally; anterior edge of zygomatic plate (external to infraorbital foramen) nearly straight and vertical; braincase rather broad; supraorbital ridges indistinct. Incisive foramina short, equivalent in length to slightly more than one-fourth of the diastema and situated about half way between front of molar series and the incisors; hinder edge of palate slightly behind level of front of M^3 . Pterygoids large, projecting downward considerably below level of either molars or bullae; bullae small, moderately inflated, and about 14.3 percent of condylobasal length. Upper incisors ivory-colored, moderately broad,

and strongly pro-odont; lower incisors much lengthened. Mandible with slender recurved coronoid process and with condyle bent abruptly inward.

Measurements.—*Type*: Total length, 306 mm.; tail, 120; hind foot, 40. Skull (*type*): Occipito-nasal length, 39.3; concylobasal length, 42; zygomatic width, 22.3; interorbital width, 7.5; length of nasals, 13.2; palatilar length, 20.6; incisive foramina, 4.2; length of bulla, 6; length of upper molar row, 5.7; length of mandible, 26.8.

Remarks.—The type specimen has been compared with three specimens of typical *Chrotomys whiteheadi* which were collected by John Whitehead in February, 1895. One of these specimens came from Lepanto Province and the others from the mountains of northern Luzon.

Specimens examined.—One from type locality.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A NEW RACE OF PENELOPE ARGYROTIS FROM
COLOMBIA.

BY BOARDMAN CONOVER

In a small collection of birds recently received from Colombia there are two specimens of *Penelope argyrotis* from Santander del Norte. Except for examples from the Santa Marta region, a "Bogota" skin in the British Museum is the only other specimen of the species recorded from Colombia. Therefore the two were compared with series from Santa Marta, Venezuela and Ecuador. Since they proved to be quite different, they are described below.

I am indebted to Mr. W. H. Phelps of Caracas for the loan of his type of *P. a. albicauda* and to Mr. John T. Zimmer of the American Museum of Natural History for specimens of the typical race.

Penelope argyrotis mesaeus subsp. nov.

Type from Pamplona, Santander del Norte, Colombia, elevation 4800', No. 16071, adult female in the Conover Collection, Chicago Natural History Museum. Collected October 23, 1944, by Kjell von Sneider.

Characters.—General appearance much darker, more olivaceous than in the other known races.

Nearest in coloration to *P. a. barbata* but upper parts darker more olive greenish less copperish and upper throat unfeathered as in typical race. Also has the light edgings to the feathers of the back of the neck practically obsolete, but the upper wing coverts are narrowly edged with white. On the top of the head the light edgings are white not gray and confined to the forehead and the superciliary stripe is very narrow and rather indistinct except behind the eye. Underneath the white edgings are not as heavy especially on the flanks and the lower belly and crissum are duller less rufous.

Differs from the typical race by having the dorsal surface darker, an olive rather than a bronze green. The underparts are also darker especially the chest and upper breast.

Differs from the type of *P. a. albicauda* in the same way as it differs from the typical race and in addition has the white edgings to the feathers of the mantle practically obsolete and the tip of the tail light cinnamon rufous instead of pale buffy.

Differs from *P. a. colombiana* by being darker more olivaceous throughout; by having the light edgings to the feathers of the upperparts restricted to the forehead and upper wing coverts, by having the sides of the face white, not gray, and the feathers of the crest broader and blunter.

Because of Mr. Todd's absence from the country I have been unable to make comparison with examples of *P. a. olivaceiceps*. However the original description of that race states that it is like the typical form but with the crest darker, olivaceous black, less brownish. Therefore, *mescus* should differ from it in the same manner as it differs from the nominate form, except for the color of the crest which must be very similar in the two races.

Remarks.—This new race is intermediate in character between the typical race from northeastern Venezuela and *barbata* from southwestern Ecuador. Like the former it has the upper throat unfeathered, while in its generally darker coloration and reduction of the pale margins to both upper and under parts it resembles the latter. The dark coloration of *mescus*, however, is even more olivaceous than in *barbata*.

The male of the pair from Pamplona is in a rather worn and faded plumage. Because of this it has a less olivaceous more coppery sheen to the upperparts. However, even in this faded condition it is darker than the darkest specimen in unfaded plumage from the Andes of Venezuela.

SPECIMENS EXAMINED.

Penelope argyrotis mescus.—2: Colombia (Pamplona, Santander del Norte, 2).

Penelope argyrotis argyrotis.—8: Venezuela (Capas, Merida, 3; La Azulita, Merida, 3; Valencia, Carabobo, 2).

Penelope argyrotis albicauda.—1: Venezuela (La Sabana, Rio Negro, Perija, 1).

Penelope argyrotis colombiana.—2: Colombia (Vista Nieve, Santa Marta, 2).

Penelope argyrotis barbata.—5: Ecuador (Malacatos, Loja, 4; Huaico, Loja, 1).

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW SPECIES OF CIRSOTREMA (EPITONIIDAE) FROM FLORIDA¹

BY HARALD A. REHDER,

Associate Curator, Division of Mollusks, United States National Museum.

In the course of determining an *Epitonium* from Florida, sent to the U. S. National Museum by Prof. T. Van Hyning, it became evident that the American group of species placed under *Cirsotrema* were in need of revision. This paper, therefore, arose out of the critical examination of these West Atlantic forms.

The type species of *Cirsotrema* Mörch 1852² by monotypy is *Scalaria varicosa* Lamarck, which Sowerby (Thes. Conch., vol. 1, pt. 4, 1844, p. 103) cites as coming from the Philippines. Species closely related are *C. multiperforata* Sowerby 1874 from Mauritius (also recorded from Singapore by Bavay), *C. bavayi* de Boury 1912 from New Caledonia, *C. plexis* Dall 1925 from Japan, and an undescribed species from the Hawaiian Islands.

Thiele in 1928 (Zeitschrift f. wiss. Zool., vol. 132, 1928, p. 92) erected the section *Cirsotremopsis* for *Scalaria cochlea* Sowerby 1844 from Loanda, West Africa, basing this separation on radular differences. There are other differentiating characters in the shell, among which may be mentioned the greater angularity of the whorls and deeper suture in the West African shell.

A species from Floridian and West Indian waters has long been known under the specific name *cochlea* Sowerby, but it differs from this form in several ways and is receiving a distinct name below. A closely related complex of species belonging to this same subgenus comprises *Cirsotrema pallaryi* De Boury 1912 from Algerian waters, *C. pumicea* Brocchi from the Italian and Algerian Pliocene, as well as several other fossil species found in the Mediterranean basin from the Helvetian (Mid-Miocene) onward, and a living Floridian form described below.

¹ Published by permission of the Secretary of the Smithsonian Institution.

² *Catalogus Conchyliorum* . . . Comes de Yoldi, fasc. 1, p. 49.

We may, therefore, restrict the Subgenus *Cirsotremopsis* Thiele to forms living in the Atlantic, or found fossil from the Middle Miocene to the Pleistocene in the lands bordering the Atlantic waters. Typical *Cirsotrema* occurs apparently only in the Indo-Pacific region.

The species *ranellina* Dall and *octolineata* Conrad, from the Jackson Eocene of Alabama and Mississippi, are probably not typical *Cirsotremas* and neither are the forms from the West Coast of North America listed as such by Durham (Journal of Paleontology, vol. 11, 1937, pp. 491-493). The species from the older Tertiary formations of Europe placed under *Cirsotrema* by Cossmann (Essais de Paleconch. comp., vol. 9, pp. 51-52) likewise must be separated from the true *Cirsotremas*.

***Cirsotrema (Cirsotremopsis) dalli*, new species.**

Shell, rather large, slender, turriculate, white. Nuclear whorls decolated, remaining whorls 7.5, sculptured with crowded, slightly sigmoid, axial ribs which are about as broad as the interspaces and composed of compressed, rather wavy, lamellae. In the interspaces obscure broad spiral cords are visible, which are also noticeable on the aboral side of the varices, of which there are two to three on each whorl. The axial ribs have an increasing tendency to form an angle at the upper portion of the whorl, which gives the later whorls an angular appearance below the suture. The axial ribs are fused together at the prominent basal cord, but resumed, though narrower, in the narrow channel that separates the basal cord from the columellar cord. The suture is deep, and the aperture is subcircular, surrounded by a stout varicial lip.

The type, U.S.N.M. No. 515240, measures: Height, 41 mm.; breadth, 14.1 mm. It was dredged by the Bureau of Fisheries at Sta. 2373 in the Gulf of Mexico, off Cape San Blas, Florida, in 25 fathoms on coral bottom. U.S.N.M. No. 93710 contains another specimen from the same station.

A third specimen is in the collection of Dr. T. Van Hyning and was collected by Mr. J. C. Russell on Bush Key, Dry Tortugas, Florida. It measures: Height, 42.7 mm.; breadth, 16.5 mm.

This species is closely related to *Cirsotrema (Cirsotremopsis) cochlea* Sowerby from Loanda, West Africa, which, however, is a more loosely coiled shell, with a deeper suture, and a resultant subdisjunct aperture. The shell which Dunker described and figured from Loanda, West Africa (Index Moll. Guineam coll. Tams, 1853, p. 18, pl. 2, figs. 46-48) is apparently a different species.

***Cirsotrema (Cirsotremopsis) arcella*, new species.**

Shell of medium size, turritid, moderately solid, chalky white. Nuclear tip broken off, remaining nuclear whorl smooth; postnuclear whorls $7\frac{1}{4}$ to $7\frac{1}{2}$, sculptured with spiral cords crossed by separated axial riblets which in subsequent whorls become broader, being composed of many compressed wavy lamellae. The ribs finally fuse together, leaving only axial rows of small suboval openings. In the third whorl, the riblets begin to become shouldered which soon becomes very prominent, giving

the last four whorls a strongly shouldered appearance, the shoulder planate, with the edge tufted or subdenticulate, later on nodose. The whorls show two or three varices on each whorl, and a broad basal cord with a narrower cord in the umbilical region along the inner edge of the aperture. Mouth suborbicular, outer lip with a varix.

The type, U.S.N.M. No. 83725, measures: Height, 16.4 mm.; breadth, 7.2 mm., and was collected by the Bureau of Fisheries at Station 2602 in 124 fathoms, 36 miles southwest of Cape Hatteras, North Carolina. Other lots in the collection of the U.S. National Museum are from 20 to 30 fathoms off Miami, Florida, and Key West, Florida.

This species differs from *Cirsotrema* (*Cirsotremopsis*) *dalli* in being smaller, and in having the shoulder more strongly angulate, and flattened horizontally above, giving the spire a sharply terraced outline; the sculpture is more obviously reticulate. It is similar to *Cirsotrema pallaryi* De Boury (Journ. de Conch., vol. 60, p. 172, pl. 8, fig. 3, 1912) from Algeria.



PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

RANGE EXTENSION FOR *EUMECES INEXPECTATUS* TAYLOR.

Since the publication of Dr. Edward H. Taylor's description of *Eumeces inexpectatus* (1932), there have been surprisingly few published references to the species. Most of these have been listed by Taylor in his review of the recent *Eumeces* literature (1943), and only a few relate to the distribution of *inexpectatus*.

Specimens available to Taylor when he monographed *Eumeces* were from localities, which, when plotted on a map, indicated that *inexpectatus* covered a decided lowland range which coincided roughly with the Coastal Plain physiographic province. Richmond and Goin's material from New Kent County, Virginia (1938), extended the range northward in the Atlantic Coastal Plain approximately sixty miles; and King (1939) listed specimens from Twenty Mile Creek, Swain County, North Carolina, in the southern Blue Ridge. The latter locality is the farthest inland and highest from which the species is known, in addition to being the first reported record for a mountainous area.

In the latter connection it may be of interest to put on record another montane locality for this lizard. On the afternoon of April 22, 1945, an adult female was collected about a mile northwest of Clifton Forge, Alleghany County, Virginia. The specimen was found under a rotting board in a cultivated field; the soil under the board was moist humus, and there was a colony of termites at one place. The weather was very hot and dry. The collection point is in a small narrow valley, with the adjacent forest cover mostly pine.

The lizard presents the following features: snout to vent, 60 mm; axilla to groin, 35 mm; snout to ear, 12 mm; dorsals, 55; scale rows at midbody, 31; supralabials, 7-7. The arrangement of the head shields

is in accord with Taylor's excellent description (1936, p. 225). Sublateral lines may be traced and become quite distinct in the axillae and groins. The tail is 67 mm in length, but about half is regenerated. The median row of subcaucals is slightly wider than in specimens from Florida.

The Alleghany County specimen extends the known range of *inexpectatus* approximately 33 miles farther north, and 167 miles west, of the previous terminal in New Kent County. The fact that the new locality is in the Valley and Ridge physiographic province indicates a unique distributional situation. As a general rule the ranges of lowland forms tend to become coastally restricted near their northern limits. Alleghany County, however, is about 200 miles from the coast and the elevation where the skink was found is 1150 feet, one of the highest at which *inexpectatus* is known.

The likelihood of extending the range into Maryland is questionable, since the species has not been found there despite the considerable collecting by members of the Natural History Society of Maryland, and other workers. However, since such species as *Abastor erythrogrammus* and *Diadophis p. punctatus* have been only recently discovered in Maryland, the possibility that *inexpectatus* may eventually be discovered in that state cannot be precluded. If the montane localities for the species are due to migration, it is likely that the James River in Virginia provided the route by which *inexpectatus* arrived in Alleghany County.

LITERATURE CITED.

- King, F. Willis, 1939. A survey of the herpetology of the Great Smoky Mountains National Park. *Amer. Midl. Nat.*, 21: 531-582.
- Richmond, Neil D., and Coleman J. Goin, 1938. Notes on a collection of amphibians and reptiles from New Kent County, Virginia. *Ann. Carnegie Mus.*, 27: 301-310.
- Taylor, Edward H., 1932. *Eumeces inexpectatus*: a new American lizard of the family Scincidae. *Univ. Kans. Sci. Bull.*, 20: 251-258.
- 1936. A taxonomic study of the cosmopolitan scincoid lizards of the genus *Eumeces*. *Univ. Kans. Sci. Bull.*, 23: 1-643.
- 1943. Mexican lizards of the genus *Eumeces*, with comments on the recent literature on the genus. *Univ. Kans. Sci. Bull.*, 29 (2): 269-300.

RICHARD L. HOFFMAN.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE CIXIINI OF THE LESSER ANTILLES
(HOMOPTERA : FULGOROIDEA).

BY R. G. FENNAH.

In the Lesser Antilles the tribe Cixiini (Cixiidae) includes only members of the subtribe Cixiina: these fall into three groups, one of which has been given generic status by Uhler under the name *Vincentia*, on the basis of a single female which forms the type of *interrupta*, while the others fall into *Oliarus* Stål as currently recognized. One of the latter is not congeneric with the Philippine genotype of *Oliarus* (*Cixius walkeri* Stål) and is separated below as a new genus; the other agrees approximately with the genotype in general facies but differs in the shape of the areolets of the vertex and in tegminal venation and is here considered as a new subgenus pending a comparison of all generic structures with those of *walkeri* Stål.

The characters used in the separation of genera are sufficiently obvious in the generic descriptions given below. Here it is enough to draw attention to the value of the shape of the system of areolets developed between the disc of the vertex and the frons, the concavity or convexity of the frons in relation to its lateral margins, the proportions of the vertex, the length of the rostrum, the size and degree of prominence of the median ocellus, the position of the fork of Sc and R in the tegmina, the degree of tuberculation of the veins, the shape of the apical areoles in the wing (with due allowance for variation), the shape of the anal segment in the female, together with that of the first valvulae and of the hind margin of the eighth sternite. The anal segment of the male is of value in the case of the species discussed below, but may prove to be unreliable for generic segregation, as on the whole it is a rather plastic structure in the Cixiidae.

The genus *Vincentia* Uhl. has been placed by Muir (*Pan-Pacific Ent.* 1925, 1,3:100) in synonymy with *Cixius* Latreille. This is incorrect as

Vincentia has a much narrower and longer vertex, a much narrower discal area on the pronotum, a short, broad and convex female anal segment, as opposed to the narrow and parallel-sided anal segment of *Cixius*; *Vincentia* is moreover quinquecarinate, though in the type the intermediate carinae are very obscure. The genus *Paracixius* erected by the writer with *armiger* as its haplotype (*Am. Mus. Novit.* 1944, 1265:1) is preoccupied by *Paracixius* Wagner, proposed as a subgenus of *Cixius*. *Paracixius* Fenn. is accordingly here replaced by the new name *Oliarissa*.

The writer is indebted to Mr. W. F. China for comparing Lesser Antillean specimens with material in his charge, and for making a drawing of the male genitalia of *Oliarus concinnulus* Fowl. from the type: this has been included in plate XII for general information.

The types of all species described as new have been deposited in the U. S. National Museum.

In the genus *Vincentia* species differ in the shape of the armature of the aedeagus in the male, and in the arrangement of sclerotised plates in the outer portion of the genital chamber in the female. In order to determine whether in each species the aedeagal processes fit during copulation into a perfectly corresponding series of notches and protuberances in the genital chamber, dissections were made of pairs of *V. christopheri*, *V. hewanorrae*, and *V. grenadana* (all described below) taken and immediately killed while in copula (see figures 48, 49 and 50). It was found that with the exception of a slight catch (Fig. 50, A) formed by a simple median prominence, which is present in all species examined near the external opening of the genital chamber, no mechanism exists for locking or positioning the aedeagal processes during mating. It was noted that in one female taken in copula and in several others which had laid their eggs that the plates could scarcely be differentiated from the remainder of the wall without staining, and were equally flexible. Moreover, it was seen that even in a single species, represented by material collected within a radius of 400 yards, the aedeagus is not always inserted to exactly the same extent in different mating pairs (in a series of nine): the determining factor appears to be the point at which the first and second valvulae of the ovipositor are compressed between the proximal portion of the genital styles and the medioventral process of the male pygofer (see figure 51); if it is half-way from their base, for instance, the aedeagus is inserted farther than it could be if the distance were two-thirds. The variation observed in this respect was not large but in view of the multiplicity of shapes assumed by the aedeagal processes would be sufficient to preclude any close mutual adaptation of sclerotised parts in the genital chamber, even if provision for such could be detected. In the writer's opinion the aedeagal processes in this and in certain other families of Fulgoroidea serve to dilate the walls of the genital chamber; they may also lend a certain rigidity to the aedeagus and in a few cases form a very simple type of locking device.

KEY TO WEST INDIAN CIXIINA.

- (1) (2) Tegmina with M3+4 forking near to main fork of media, M 1+2 forking much farther from main fork..... *Mnemosyne* Stål.
- (2) (1) Tegmina with fork of M 1+2 nearer to main fork of M than is the fork of M 3+4..... (3)
- (3) (4) Rostrum with subapical joint attaining hind trochanters, species 7 mm. or more in total length.....
Cyclopoliarus gen. nov.
- (4) (3) Rostrum with subapical joint not reaching to hind trochanters, species 6 mm. or less in total length..... (5)
- (5) (6) Apex of rostrum surpassing hind trochanters, anal segment of female ovate, that of male not forming a deflexed medial point distally..... *Vincentia* Uhler
- (6) (5) Apex of rostrum scarcely attaining hind trochanters, anal segment of female broadly triangular, that of male distally forming a median deflexed point.....
Oliarus Stål, subgen. *Melanoliarus* nov.

CYCLOPOLIARUS, new genus.

Vertex oblong, not much produced before eyes, width across basal angles to length along one side 1:1.8, disc hollowed out, sometimes a short median carina present basally, anterior margin truncate, lateral margins straight, diverging basad, posterior margin rectangularly excavate, transverse carina arising one-third from apex, areolets small, broadly quadrangular, a quadrate cell medially 1.5 times as long as broad; frons with lateral margins expanding to below level of antennae then incurved, lateral margins expanded laterad or antero-laterad, median ocellus present, median carina percurrent on frons and clypeus, broadly forked at extreme base, rostrum long, subapical segment attaining hind trochanters, apical segment at least overlapping base of fifth sternite in living material. Pronotum short, a carina on each side following hind margin of eyes, posterior margin excavate in an obtuse angle; mesonotum broader than long with five carinae, the intermediate carinae extending from basal margin to one-third from apex; hind legs slender. Tegmina with Sc+R 1.2 to 1.5 times length of Sc between fork of Sc+R and branch to stigma, M forked at M—Cu cross-vein, basad of stigma, Cu 1 forking somewhat basad of Sc+R fork, six subapical areoles, R usually with three branches at margin, M1 with two, M2 simple, M 3+4 forked once, Cu 1a and Cu 1b simple. Wings with R forked rather widely at apex, M with a narrower fork about a third longer. Anal segment of female about as long as preceding three tergites, broader than long (1.9:1), margins almost straight, strongly converging distally. Ovipositor with broad portion of first valvulae occupying two-thirds to three-quarters of total length of first valvulae. Anal segment of male ovate in dorsal view. Pygofer with lateral angles bluntly rounded, medioventral process acutely triangular. Genital styles each consisting

of a straight limb terminating in a quadrate lobe, with a triangular flange or a curved spine on inner face.

Genotype, *Oliarus biperforatus* Fenn. Proc. U. S. Nat. Mus., Vol. 95, p. 419, 1945.

KEY TO SPECIES OF CYCLOPOLIARUS

- (1) (2) Lateral margins of frons foliately expanded antero-laterad, M 1+2 about a quarter or one-fifth length of M 3+4.....(3)
- (2) (1) Lateral margins of frons expanded laterad, not foliate.....(7)
- (3) (4) M 1+2 one-quarter length of M 3+4, tegmina not infusate at margin.....*naparimae* n. sp.
- (4) (3) M 1+2 one-fifth length of M 3+4, tegmina brown at margin.....(5)
- (5) (6) Clypeus, labrum, and disc of frons piceous.....*biperforatus* Fenn.
- (6) (5) Sides of labrum, a spot on frons at each side of middle at level of median ocellus piceous.....*omani* Metcalf
- (7) (8) Median carina of frons forked one-third from base.....*atkinsae* Myers
- (8) (7) Median carina of frons forked one-seventh from base.....(9)
- (9) (10) Ovipositor with first valvulae broad for three-quarters of length, a tooth on sternite at base on outer side of each valvula.....*montserratensis* n. sp.
- (10) (9) First valvulae broad for six-sevenths of length, tooth scarcely visible*jamaicensis* n. sp.

Cyclopolarus naparimae, new species.

(Figs. 20, 22-25, 64)

Male. Length, 6.5 mm.; tegmen, 7.3 mm. Female. Length, 7.1 mm.; tegmen, 7.7 mm. Reddish-brown, legs testaceous; tegmina hyaline, stigma pallid except for a fuscous line on distal margin, veins reddish-brown basally, testaceous at middle, fuscous distally, the distal transverse veins clouded with brown; both tegmina and wings slightly tinged with brown near apical margin.

Anal segment asymmetrical in type specimen, tectiform, subovate in dorsal view tapering to a blunt point directed obliquely to left. Pygofer with lateral margins subangulately rounded; medioventral process acutely triangular. Aedeagus tubular, a slightly sinuate spine arising at base on left, directed posteriorly, a shorter spine on right side one-third from base directed obliquely anteriorly; a small sclerotised plate at base of flagellum ventrally, from which arise a long stout S-shaped spine on right side and a broad stout limb directed obliquely to left, which gives off a long stout spine curving mesad, forward and laterad through 180°, a small spine posterior to this directed mesally, and a very long spine curving mesally and anteriorly, then curving sharply to point posteriorly in its distal half; flagellum with two parallel curved callused ridges on its upper surface, the dorsal ridge smaller than that on which it rests, pointed at one end.

Ovipositor with broad basal portion of first valvulae occupying rather more than half of total length of valvulae. Margin of eighth sternite at base of first valvulae not pointed, protruding in a rounded lobe.

Described from one male and one female collected by P. L. Guppy at La Advenance, Princetown, Trinidad, B.W.I. (June 5, 1912) on cacao. This species is readily distinguished by the genitalia and by its smaller size and sparser marking from *omani* and *biperforatus*. This section of the genus, apart from being distinguished by the antero-oblique dilation of the lateral margins of the frons, appears to include species in which the predominant colour is brown, varied with ochraceous in some species, the colour including the tegminal markings and the veins, while in great dilution it sometimes suffuses the whole tegmen. The second section of the genus seems to include only species which are dorsally deep fuscous to piceous, apart from reddish-brown marginal tints, and which have clear wings, occasionally marked with deep fuscous, and a very dark stigma. If, with the addition of new species to the genus, this correlation holds good two subgenera will need to be recognised.

***Cyclopolarus montserratensis* new species.**

(Fig. 43).

Female. Length, 5.9 mm.; tegmen, 6.9 mm.

Piceous; lateral margins of vertex, frons, clypeus, a patch below fenestrae, second segment of rostrum, carinae of pronotum, legs except femora pallid testaceous, lateral and intermediate carinae on mesonotum reddish brown; tegmina hyaline, veins, stigma, apex of cell Cu1b and sutural margin from base to junction with claval vein fuscous.

Ovipositor with broad basal portion of first valvulae extending for three-quarters length of second valvulae. Hind margin of eighth sternite produced in a point at base of each first valvula.

Described from one female taken by the writer at 1,000 ft. in the drier type of rain-forest, Central Range, Montserrat, B.W.I. (February 20, 1940). This species is distinguished by its genitalia and colouration; it is rather larger than the following, which it most nearly resembles. The rostrum in the type reaches to the seventh sternite but can only be compared with that of the same sex in other species, as in all near-oliarine genera this organ shows sexual dimorphism in regard to length.

***Cyclopolarus jamaicensis*, new species.**

(Figs. 14-19, 21, 53.)

Male. Length, 4.7 mm.; tegmen, 5.0 mm. **Female.** Length, 5.0 mm.; tegmen, 5.4 mm. Tegmina hyaline with a fuscous band at base between Sc+R+M and first claval vein, a second band at middle between forks of Sc+R and Cu 1.

Brownish-testaceous on ventral surface; vertex and frons fuscous to piceous, carinae pale, remainder of dorsum dark reddish-brown, legs pale.

Aedeagus with two long straight spines arising at base on left side directed posteriorly, a long stout spine arising near base of flagellum on

left, curved and directed anteriorly, a small spine ventrally at base of flagellum directed to left, a long slightly curving spine arising ventrally on left side of aedeagus near base directed posteriorly; flagellum with two small spines near apex on outer margin, a long sickle-shaped spine on inner margin. Genital styles narrow at middle in side view, large and subquadrate distally with a narrow, almost spinose, curved lobe on inner face.

Ovipositor with broad basal portion of first valvulae not quite four-fifths of total length of valvulae. Hind margin of eighth sternite not or scarcely pointed at base of each first valvula.

Described from two males and two females collected by the writer near Mona House, near Liguanea, Jamaica (November 25, 1940) on logwood and *Agave* sp. This species is distinguished by the colouration and by the male and female genitalia. The rostrum in the female is as long as in *montserratensis*.

VINCENTIA Uhler.

Uhler 1895 *Proc. Zool. Soc. Lond.* : 67. Genotype, *V. interrupta* Uhler *loc. cit.*

Vertex along one side 1.4 times longer than wide between basal angles, anterior margin transverse, lateral margins diverging slightly basad, posterior margin subrectangularly excavate, transverse carina arising two-thirds from base of lateral margin, joining a small quadrangular cell medially at apex, disc hollowed out, devoid of a median longitudinal carina; frons slightly curved in profile, lateral margins expanded laterally, median carina slightly broadened rather than forked at base, percurrent through clypeus, median ocellus very obscure, not half as large as lateral ocelli. Tegmina with veins distinctly granulate, Sc+R at least 1.3 times as long as Sc between Sc+R fork and stigmal fork. Wings with apical fork of R enclosing an areole one-third length of that enclosed by apical fork of M. Anal segment of male broadly ovate in dorsal view, widest distad of middle, apical margin slightly reflexed. Pygofer with lateral angles subacute, medioventral process with parallel horizontal ridges. Genital styles broad at base, strongly tapering at middle, expanded apically in a subovate lobe, with a flange of varying shape on inner face. Anal segment of female with sides deflexed, lateral margins as seen in dorsal view convex; not large, rounded-quadrate as seen from above. Hind margin of eighth sternite not produced in a point at base of first valvulae. Ovipositor with broad basal portion of first valvulae extending for about three-quarters of their total length. Egg bluntly ovoid, smooth. The sclerotised parts of the body of all known species are pale, testaceous, or reddish or sepia brown, not piceous.

Vincentia interrupta Uhler.

(Figs. 35-37, 42, 54.)

Male. Length, 3.6 mm.; tegmen, 3.7 mm. Female. Length, 4.1 mm.; tegmen, 4.9 mm. Aedeagus tubular, flagellum curved to left and

bent anteriorly in its distal half; ventrally three long spinose processes arising near base, that on left slender, tapering, slightly curved, middle process swollen at base, then straight to its distal point where it becomes swollen and bent through 90° and again through 75° to point obliquely anteriorly, the spine on right stout, tapering, subangulately bent at middle; the sclerotised support of left side of aedeagus with a short curved prominence; flagellum with a curved spine on outer side at middle and a longer straight spine at apex.

Redescribed from three males and five females taken at Three Rivers Settlement, St. Vincent, by the writer (August 23, 1941). Mr. China has kindly compared a male specimen with Uhler's female type. The species is distinguished by the shape of the aedeagal armature: it would seem that Sc is proportionately longer in relation to Sc+R than in other species, but a longer series is required to settle this point.

Vincentia hewanorrae, new species.

(Fig. 26-30, 46, 47, 49, 50, 55, 63.)

Male. Length, 3.5 mm.; tegmen, 3.7 mm. Female. Length, 4.1 mm.; tegmen, 4.9 mm. Aedeagus tubular, flagellum curved to left and bent anteriorly in its distal half; at base a sclerotised plate expanded in unequal pointed lobes; ventrally two long spinose processes arising near base, that on left side bent through 90° , the other forming an abrupt loop through 225° to point anteriorly; sclerotised support of left side of aedeagus with its upper edge produced distally into a straight spine and a stout, small, curved hook; flagellum with a broad curved spine on inner edge and two spines on outer margin at apex, the longer curved mesally, the shorter not more than half as long as preceding, directed anteriorly. Genital styles with upper margin of distal lobe subangulately bent.

Described from 11 males and 19 females collected by the writer on shrubs of drier type rain-forest, Morne Fortunée, St. Lucia, B.W.I. on Feb. 3, 1940 and on various dates in 1941 and 1943. The species is distinguished by the shape of the angles on the basal flanges of the aedeagus, and by that of the aedeagal armature, as well as by the shape of the upper margin of the distal lobe of the genital styles, which is subangulate in this species and rounded in *interrupta*. The specific name is taken from the Indian name for St. Lucia, in which the species is apparently endemic.

Vincentia christopheri, new species.

(Figs. 31-34, 41, 52.)

Male. Length, 3.5 mm.; tegmen, 3.5 mm. Female. Length, 3.2 mm.; tegmen, 4.5 mm. Brown; disc of mesonotum and clypeus distinctly ochraceous, lateral margins of vertex, frons, and clypeus, a patch below fenestrae, second segment of rostrum, legs and abdominal sternites at middle pallid yellow. Tegmina hyaline with testaceous veins, forks of Sc+R, and Cu1, transverse veins, stigma and sutural margin near junction with claval vein fuscous.

Aedeagus tubular, flagellum curved to left and bent anteriorly in its distal half; at base a sclerotised plate produced on right into a small decurved hook, on left into a lobe with four distal teeth; ventrally two long spinose processes arising near base, the spine on left side bent through 75° in its apical third, the other swollen distally and bent through 270° to point to right; sclerotised support of left side of aedeagus with its upper edge forming a short ridge and a short stout curved hook; flagellum with a short broad spine at its base, a spine on outer margin at middle and a longer spine arising on inner margin two-thirds from base, lying obliquely across flagellum, apex of flagellum pointed. Genital styles tapering to middle then expanding into an ovate lobe flattened on its outer margin, a prominent triangular flange on its inner face.

Described from 12 males and 13 females collected by the writer at Old Road, St. Kitts, B.W.I. (Jan. 23, 1942) on *Coccoloba uvifera* and *Acacia* sp. This species is distinguished by the shape of the aedeagal armature.

***Vincentia grenadana*, new species.**

(Figs. 38-40, 48, 51.)

Male. Length, 3.7 mm.; tegmen, 3.7 mm. Female. Length, 4.1 mm.; tegmen, 5.0 mm.

Brown; lateral margins pallid yellow.

Aedeagus tubular with flagellum bent strongly to right and expanded distally, ventrally near base a short rectangular spine directed posteriorly; dorsally, arising from base a long sinuate spine overlying aedeagus for its whole length, looped through 180° at its apex; laterally a long stout spine curved through 180° below aedeagus and recurved at apex; flagellum expanded distally, apical margin truncate with a slender sinuate spine. Genital styles narrowed to middle, expanding distally into a lobe curved anteriorly at tip, with a large triangular flange, almost as large as the lobe itself, on its inner face.

Described from 4 males and 7 females collected by the writer on *Miconia*, *Inga* and low bushes at Mardi Gras, Grenada (October 20, 1943). This species is distinguished by the shape of the aedeagal armature and by the shape of the genital styles.

***Vincentia substigmatica* (Leth.), new combination.**

Diacira substigmatica Lethierry, 1881 *Ann. Soc. Ent. Belgique* 25: 13.

The size (5 mm.), reddish-brown colour and paler legs support the view that *substigmatica* must be placed in *Vincentia*. The species is probably endemic in Guadeloupe and the inclusion of the distribution in the original description must be considered of importance in fixing the species for subsequent recognition.

OLIARUS Stål.

Stål 1862 *Berl. Ent. Zeit.* 6: 306. Genotype, *O. walkeri* Stål 1859 *Eugen. Resa*: 272. Distant 1906.

Melanoliarus, new subgenus.

Vertex narrow, length of one side 1.3 times width across basal angles, disc hollowed out, devoid of a longitudinal median carina, transverse carina arising two-thirds from base joining a small quadrate cell before anterior margin; frons with disc slightly sloping away from median carina, lateral margins not foliate, produced laterally, median carina broadly forked at basal seventh, median ocellus distinct; rostrum not attaining posterior trochanters. Pronotum with lateral carinae following hind margins of eyes; mesonotum quinquecarinate, less obviously so in the female. Hind tibiae relatively short and stout with a minute spine basally, a larger spine at middle and a large tooth and four small teeth at apical border. Anal segment of male with apical margin strongly deflexed, forming a point below telson. Pygofer with posterior margin angularly convex with a slight indentation medially. Genital styles in side view narrowest at middle, expanded into a lobe distally that curves anteriorly at apex, a stout, subacutely pointed lamina on its inner face. Anal segment of female very broadly triangulate. First valvulae of ovipositor with broad basal portion extending posteriorly for less than half of total length. Tegmina with Sc+R four times as long as Sc between Sc+R fork and stigmal fork, Sc in this distance shorter than stigma, Sc with two branches at margin, R with two, M with five, Cu 1 with two. Wings with first apical cell of R subequal to first apical cell of M, both shortly triangular.

Type of subgenus, *Oliarus maidis* Fenn. 1945. *Proc. U. S. Nat. Mus.*, Vol. 95, p. 423.

Oliarus (Melanoliarus) maidis Fenn.

(Figs. 4-13, 45.)

Aedeagus broad, tubular; an unarmed sclerotised plate forming a flattened sheath for apodeme of penis in its basal half, and extended laterally into a thin transverse plate in its distal half; apodeme of penis passing distally into a stout oblique sclerotised tube, armed at its distal edge with two strongly curved spines rotating in the same plane, and a long shallowly curved spine directed anteriorly.

Material of this species is to hand from Grenada (five males, three females, October 19-21, 1943), St. Vincent (three males, three females, August 20, 1941), and St. Lucia (18 males and 24 females, March 20-23, 1939 and on various dates 1940-44) all taken by the writer on maize, on the edge of woodland, or at light.

Oliarus (Melanoliarus) campestris, new species.

(Figs. 1-3, 44, 62.)

Male. Length, 3.2 mm.; tegmen, 3.3 mm. Female. Length, 3.2 mm.; tegmen, 3.5 mm. Piceous; margins and carinae of frons and pronotum, apex of scutellum, base of procoxae, femora at apex, tibiae externally and metatarsi pallid yellow.

Aedeagus broadly tubular, with a broad sclerotised plate ventrally in

its basal half bordered distally by a thick transverse ridge which bears at one end a straight stout spine directed laterally, and at the other end a slightly longer spine curved mesad, a twisted fold on right side of ventral plate in basal half; apodeme of penis passing distally into a stout sclerotised oblique cylinder which bears a short sinuate spine dorsally at its base, and two spines distally, one short and curved through 180° the other long, slightly sinuate and directed anteriorly.

The writer has collected this species in Jost Van Dyke, B.V.I. (one male, Feb. 18, 1944), Antigua (three males, one female, August 3, 1943), St. Kitts (nine males, thirteen females, on beans, September 7, 1943), Nevis (two males, four females, January 16, 1942), Hope, Jamaica (one male, one female, November 15, 1940).

Subtribe Myndina.

PARAMYNDUS Fenn.

Fennah 1945 *Proc. U. S. Nat. Mus.*, Vol. 95, p. 424. Genotype, *P. cocois* Fenn. *ibid*.

To this genus must be added the closely allied *Myndus crudus* Van Duzee from Jamaica (*Bull. Buff. Soc. Nat. Sci.* 1907, 8: 33), which in a comparison of two series of eight and thirteen males appears to differ from *cocois* constantly in the shape of the aedeagal armature and that of the hind margin of the pygofer, as shown in figures 65, 66, 67, and 68. *Paramyndus* differs from *elata musiva* Germar, the Old World genotype of *Myndus* Stål, in having the frons more dilated distally, its lateral carinae not so obliquely raised, the median ocellus very obscure, no distinct median transverse carina on vertex, the eyes strongly excavate below, the vertex 4.5 times the length of the pronotum in middle (3.0 times in *musivus*), the vertex covering the pronotal disc entirely, the tegmina with Cu forking basad of Sc+R fork, Sc+R forking six-sevenths of distance from basal cell to stigma, the greatest width of the tegmen scarcely four-fifths of length between Mf and apex of tegmen (equal in *musivus*), the wing with the first marginal cell of M 1.5 times as long as its stalk (about 5 times in *musivus*). From *Nymphocixia* V. D. it differs markedly in the form of the head and in the carinae of the frons.

TRIBE BOTHRIOCERINI.

BOTHRIOCERA Burm.

Burmeister 1835 *Handb. Ent.* 2 (1):156. Genotype, *B. tinealis* Burm., *ibid*.

Bothriocera eborea Fenn.

(Figs. 60, 61)

Fennah 1943, *Psyche*, 1, 2 : 14.

In the mount from which the original illustration of the aedeagal flagellum was made the apical spine was twisted to face mesally instead of postero-laterally. The flagellum of a specimen from Jost Van Dyke is figured to show the normal position of the flagellar appendages. In

addition to the localities already given this species has been collected by the writer in the following: Martinique, F.W.I. (one male, Fort de France, March 1944), Tortola, B.V.I. (two males, eight females, February 15-17, 1944), Jost Van Dyke, B.V.I. (three males, four females, February 18, 1944).

Bothriocera bicornis (F.)

Fabricius 1803 Syst. Rhyng.: 101.

One male and three females collected by the writer in Maracas Valley, Trinidad (January 21, 1945). The genitalia and pigmentation of the tegmina agree well with those of the species figured by Metcalf as *bicornis* (F.).

EXPLANATION OF PLATES.

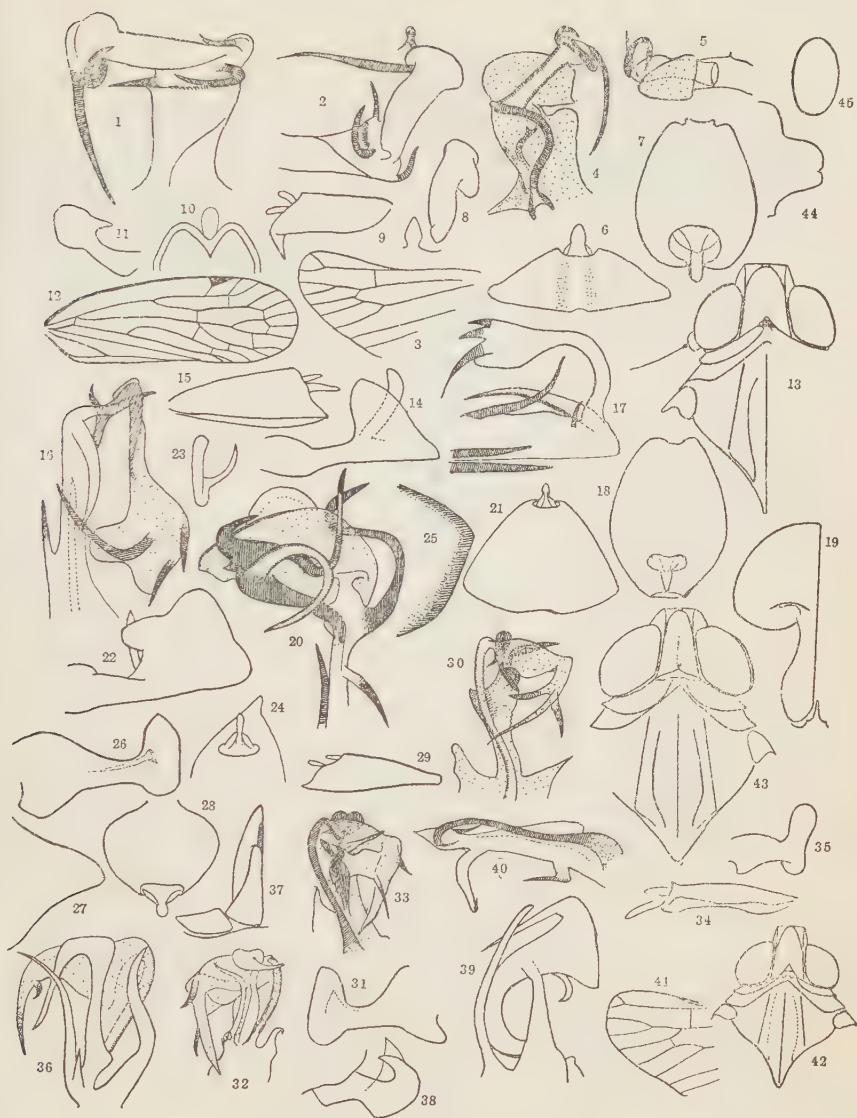
PLATE XI.

1. *Oliarus campestris* Fenn., aedeagus, ventral view (St. Kitts).
2. *O. campestris* Fenn., aedeagus, left side (shown with ventral surface uppermost).
3. *O. campestris* Fenn., antero-apical portion of left wing.
4. *Oliarus maidis* Fenn., aedeagus, dorsal view (St. Vincent).
5. *O. maidis* Fenn., aedeagus, right side.
6. *O. maidis* Fenn., anal segment of female, dorsal view.
7. *O. maidis* Fenn., anal segment of male.
8. *O. maidis* Fenn., medioventral process of pygofer and left genital style, ventral view.
9. *O. maidis* Fenn., anal segment of male, right side.
10. *O. maidis* Fenn., apical margin of anal segment of male, posteroventral view.
11. *O. maidis* Fenn., right genital style, side view.
12. *O. maidis* Fenn., right tegmen.
13. *O. maidis* Fenn., head and left half of thorax.
14. *Cyclopoliarus jamaicensis* Fenn., left genital style, lateral view.
15. *C. jamaicensis* Fenn., anal segment of male, left side.
16. *C. jamaicensis* Fenn., aedeagus, dorsal view.
17. *C. jamaicensis* Fenn., diagram of aedeagus viewed from right side.
18. *C. jamaicensis* Fenn., anal segment of male, dorsal view.
19. *C. jamaicensis* Fenn., left genital style, ventral view.
20. *C. naparimae* Fenn., aedeagus, dorsal view.
21. *C. jamaicensis* Fenn., anal segment of female.
22. *C. naparimae* Fenn., left genital style, side view.
23. *C. naparimae* Fenn., diagrammatic posterior view of left genital style.
24. *C. naparimae* Fenn., apical portion of anal segment of male.
25. *C. naparimae* Fenn., lateral margin of pygofer, left side.
26. *Vincentia hewanorrae* Fenn., left genital style, side view.
27. *V. hewanorrae* Fenn., lateral margin of pygofer, left side.
28. *V. hewanorrae* Fenn., anal segment of male, dorsal view.
29. *V. hewanorrae* Fenn., anal segment of male, right side.
30. *V. hewanorrae* Fenn., aedeagus, dorsal view.

31. *V. christopherei* Fenn., right genital style.
32. *V. christopherei* Fenn., aedeagus, ventral view.
33. *V. christopherei* Fenn., aedeagus, dorsal view.
34. *V. christopherei* Fenn., anal segment of male, right side.
35. *V. interrupta* Uhl., left genital style.
36. *V. interrupta* Uhl., aedeagus, ventral view.
37. *V. interrupta* Uhl., valvulae of left side, ventral view.
38. *V. grenadana* Fenn., left genital style, side view.
39. *V. grenadana* Fenn., aedeagus, dorsal view.
40. *V. grenadana* Fenn., aedeagus, right side.
41. *V. christopherei* Fenn., apical portion of left wing.
42. *V. interrupta* Uhl., head and thorax.
43. *Cyclopoliarus montserratensis* Fenn., head and thorax.
44. *Oliarus campestris* Fenn., posterior margin of pygofer, lateral view.
45. *O. maidis* Fenn., egg.

PLATE XII.

46. *Vincentia hewanorrae* Fenn. *in copula*.
47. *Vincentia hewanorrae* Fenn., position of genitalia during copulation.
48. *V. grenadana* Fenn., aedeagus extended in genital chamber, dorsal view.
49. *V. hewanorrae* Fenn., aedeagus extended in genital chamber, dorsal view.
50. *V. hewanorrae* Fenn., diagrammatic lateral view of aedeagus in genital chamber, shown upside down.
51. *V. grenadana* Fenn., semi-diagrammatic view of genital styles, medioventral process and first and second valvulae during copulation.
52. *V. christopherei* Fenn., outer portion of genital chamber, dorsal view, showing sclerotised areas.
53. *Cyclopoliarus jamaicensis* Fenn., valvulae, left side.
54. *Vincentia interrupta* Uhl., antenna, ventral view.
55. *Vincentia hewanorrae* Fenn., egg.
56. *Oliarus concinnulus* Fowl., aedeagus (from drawing made by W. E. China from type).
57. *Oliarus concinnulus* Fowl., aedeagus (ditto).
58. *O. concinnulus* Fowl., left genital style (ditto).
59. *O. concinnulus* Fowl., anal segment of male (ditto).
60. *Bothriocera eborea* Fenn., aedeagus, dorsal view.
61. *B. eborea* Fenn., egg, side view.
62. *Oliarus campestris* Fenn., apex of vertex and base of frons.
63. *Vincentia hewanorrae* Fenn., ditto.
64. *Cyclopoliarus naparimae* Fenn., ditto.
65. *Paramyndus crudus* (V. D.), medioventral portion of pygofer.
66. *Paramyndus cocois* Fenn., ditto.
67. *Paramyndus crudus* (V. D.), apex of aedeagus.
68. *Paramyndus cocois* Fenn., ditto.



Details of Lesser Antillean Cixiini.



Details of Lesser Antillean Cixiini.



PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THE STATUS OF *THAMNOPHIS BUTLERI* COPE,
AND A REDESCRIPTION OF *THAMNOPHIS*
BRACHYSTOMA (COPE).

BY ALBERT G. SMITH.

The rather consistent reduction of scale rows in specimens of *Thamnophis butleri* from New York and Pennsylvania, together with a smaller number of labial scales, has induced me to examine the available material from throughout the range of this species. *Thamnophis butleri* has had an interesting history. Cope described a specimen from Richmond, Rush County, Indiana, as *Eutaenia butleri* in 1888, and in 1892, he described *Eutaenia brachystoma* on the basis of a specimen from near Franklin, Venango County, Pennsylvania. Although noting the decided reduction in scutellation of the Pennsylvania specimens, Ruthven (1908) did not have sufficient specimens for proper analysis, and included *brachystoma* in the synonymy of *butleri*. Blanchard (1925) possibly because of the similarity between *butleri* and *radix*, considered *butleri* a subspecies of *radix* in his key. In 1932, Davis showed the validity of considering *butleri* a species. In view of the present study, as will be shown, it seems advisable to resurrect Cope's "*Eutaenia brachystoma*" and to recognize both *butleri* and *brachystoma* as valid species.

Thamnophis butleri (COPE)

Eutaenia butleri, 1888, COPE, Proc., U. S. Nat. Mus., 11: 399.

Thamnophis butleri, 1908, RUTHVEN, Bull., U. S. Nat. Mus., 61: 87 (in part).

Type.—A specimen taken near Richmond, Rush County, Indiana. The actual specimen seems to have been part of a collection sent to Cope for study from Purdue University. The specimen was not returned to Purdue, and has not been found in any of the known Cope collections.

Diagnosis:—A small *Thamnophis* in which there are 19 scale rows, and normally 7 upper labials.

Description:—A small *Thamnophis* with the scales arranged in 19–19–17 rows. Four Ohio and three Michigan specimens have the scales in 17–19–17 rows. One Ohio specimen has 19–17–17 rows, and one Michigan 17–17–15. The lateral scales are wider than the dorsal and all scales are keeled. The lateral stripe occurs on the 2nd, 3rd, and 4th rows. The inter stripe blotches are not the same size as occurs in *radix*. The upper labials are normally 7, frequently 6, but very rarely 8. There are normally 8 lower labials, although 9 are frequent. An occasional specimen may have 7 or 10 lower labials. There is one pre-ocular and normally 3 post-oculars, although 2 post-oculars are common. There is one temporal in the first row, and there may be either one large and one small, or just one large temporal in the second row. The anal plate is not divided. The head plates are normal as in the genus; the eye is in contact with the 3rd and 4th upper labial, and the loreal is present. The ventrals in 119 males range from 132 to 147, mean 141; in 104 females they range from 129 to 146, mean 139. The caudals in 91 males¹ vary from 57 through 71, mean 64; while in 97 females they vary from 51 to 63, mean 55. In 91 males the tail/total length ratio is from .219 to .265, mean .250; in 97 females from .200 to .244, mean .222. The largest specimen examined was a male from Middlesex County, Ontario, (R. O. M. Z., no. 5527), with a total length of 573 mm., tail, 130 mm.

Range:—The snake occurs in glaciated territory in southeastern Wisconsin and southern Michigan, through Indiana (east of the dunes), and Ohio, and in southwestern Ontario. It is frequently found near water or in moist situations.

Material examined:²—

WISCONSIN (24 ♂, 15 ♀) *Dodge County*: Atwater; *Milwaukee County*: Bay View, Milwaukee, Wauwatosa; *Racine County*: Corliss; *Waukesha County*: Big Bend, Menominee Marsh, Nashotah, Upper Nemahbin Lake.

MICHIGAN (37 ♂, 51 ♀) *Eaton County*: Olivet; *Huron County*: Sand Point, Stoney Island, Bay Port, Saginaw Bay; *Ingham County*: East Lansing; *Livingston County*: Brighton, Byron; *Monroe County*: Point Place; *Oakland County*: Pontiac; *Shiawassee County*; *Washtenaw County*: Ann Arbor, Chelsea, Ypsilanti; *Wayne County*: Northville Hatchery.

OHIO (42 ♂, 17 ♀) *Champaign County*: Brush Lake; *Crawford County*: Cranberry Twp.; *Cuyahoga County*: East Rockport; *Erie County*: Sandusky; *Franklin County*: Columbus; *Greene County*: near Xenia, Miami Twp.; *Hardin County*: near Mt. Victory; *Huron County*: Greenfield Twp.; Richmond Twp.; *Logan County*: West Liberty; *Lucas*

¹ The difference in numbers of specimens used was occasioned by the number of incomplete tails.

² Numbers after state names refer to numbers of specimens seen from these areas.

County: Bono, Reno Beach, Toledo; Marion County: Montgomery County: Dayton; Ottawa County: East of Bono, Erie Twp., Port Clinton; Portage County: Hiram; Richland County: Jackson Twp., Plymouth Twp.; Seneca County: Venice Twp.; Wayne County: Wooster. INDIANA (3 ♂, 1 ♀) DeKalb County: Waterloo; Kosciusko County: Turkey Lake; Marion County: Marshall County: Lake Maxinkuckee; Porter County: near Valparaiso; Rush County: Richmond. ONTARIO (15 ♂, 25 ♀) Middlesex County: near Newbury; Kent County: Rondeau Park.

THAMNOPHIS BRACHYSTOMA (COPE).

Eutaenia brachystoma, 1892, COPE, Amer. Nat., 26: 964-5.

Thamnophis butleri, 1918, RUTHVEN, Bull., U. S. Nat. Mus., 61:87 (part).

Thamnophis radix butleri, 1927, BISHOP, N. Y. State Mus., handbook 3: 91.

Type:—An adult male, A. N. S. P., 10751, taken on the Alleghany River, near Franklin, Venango County, Pennsylvania, by Miss Anna M. Brown, in 1891 (?).

Diagnosis:—A small *Thamnophis* in which the scale rows are normally 17 and the upper labials 6.

Description:—A small snake in which the scales are almost always arranged in 17-17-17 rows. Four Pennsylvania specimens, including the type, have 17-19-17 rows, and one New York specimen has 19-19-17 rows. The lateral scales are the widest. All scales are keeled, with the exception that the scales bordering the ventrals may be lightly keeled or not at all. The stripes are on the 2nd, 3rd, and 4th rows anteriorly always; posteriorly it may be on 2 and 3. The dorsal stripe is always present, though tending to disappear. The blotches between stripes are much reduced, mostly to such an extent that they appear more as a stripe border, or they may be absent. Generally, this snake tends to be darker than *butleri*. The head is not definitely distinct from the neck. The oculars are normally 1-3, but may be 1-2. The temporals are usually 1-2, with one large and one small in the posterior row. The head plates are normal for the genus; the loreal is present; and the eye is in contact with the 3rd and 4th upper labials. The upper labials are normally 6, very rarely they may be 7. The lower labials are normally 8, sometimes 7 or 7-8, but are never 9. In 117 males, the ventrals vary from 134 to 146, mean 140, while in 107 females they range from 132 to 146, mean 139. The caudals in 103 males are from 57 to 72, mean 67; in 98 females, they vary from 51 to 64, mean 59. The tail in 103 males has a total length ratio of from .207 to .276, mean .246; in 98 females, from .198 to .246, mean .222. The largest specimen examined was a female (C.M. 9503) from near Tionesta, Forest County, Pennsylvania, with a total length of 506 mm., tail, 118 mm.

Range:—This species at present is known from areas in southwestern

New York and in northwestern Pennsylvania within the upper Alleghany River drainage. It occurs both in glaciated and unglaciated areas.

Material examined:

NEW YORK (78 ♂, 74 ♀) *Cattaraugus County*: Lillibridge Creek, near Limestone; *Chataqua County*: Poland Center, near Randolph.

PENNSYLVANIA (37 ♂, 32 ♀) *Clarion County*: Cooksburg; *Forest County*: 12 miles NE of Tionesta; Brookston; *McKean County*: Port Alleghany; *Mercer County*: Sandy Lake; *Venango County*: near Wesley, near Franklin; *Warren County*: near Warren.

VARIATION:—There is a decided difference in scale rows between the two species. The scales of *Thamnophis butleri* are normally arranged in 19-19-17 rows, while those of *T. brachystoma* are arranged in 17-17-17 rows. In the 7 specimens of *butleri* having a 17-19-17 pattern, an additional row begins near the 25th ventral and continues to near the 100th. In the specimen having the 19-17-17 pattern, the 4th row is dropped at the 40th ventral. Some of the Wisconsin specimens show the 21 rows, characteristic of *Thamnophis radix*, in the neck region. In the specimens of *Thamnophis brachystoma* with a pattern of 17-19-17 rows, the extra row is added, as in *butleri*, near the 25th ventral and continuing to the 100th. In the one New York specimen showing 19-19-17 rows, the 4th row is dropped at the 105th ventral.

There is no appreciable difference in the number of ventral scales between the two species. The ventral count is slightly higher in the case of some Wisconsin *butleri*. However, *T. brachystoma* has a slightly higher mean number of caudals than does *T. butleri*; in *T. brachystoma* the range is 53 to 71, mean 67, while in *T. butleri* the range is 52 to 70, mean 66.

The difference in upper labials, though not as marked as the scale rows, is a distinguishing character. *T. brachystoma* has 6 upper labials, only 6 (.04%) having 7. In *T. butleri*, however, the upper labials number 7 in 57% of the specimens and 6 in 39%. In the remaining 4% the upper labials number 8. The lower labials of *T. brachystoma* never exceed 8, but in *T. butleri* 21% of the specimens have 9 lower labials.

Males of *Thamnophis butleri* measured from 250 mm. to 540 mm., with the tail being 23 to 26% of the total length. The males of *T. brachystoma* measured from 290 mm. to 440 mm., the tail being 24 to 28% of the total length. Females of *T. butleri* measured from 260 mm. to 560 mm., the tail being 20 to 24% of the length, while females of *T. brachystoma* measured from 250 mm. to 506 mm., the tail being 21 to 25% of the length. The head size of both species was checked, and the difference in size of the head is so small that it is hardly recognizable as a distinguishing character.

Both *Thamnophis butleri* and *brachystoma* are derived from *Thamnophis radix*, from which species they may be distinguished by the differences in position of the lateral stripe, by the higher mid-body number (21) scale rows of *radix*, and by the higher number of labials, ventrals, and caudals of *T. radix*.

DISTRIBUTION:—As has been shown, *Thamnophis brachystoma* is

restricted to a few areas in New York and Pennsylvania. It seems reasonable to assume that *T. brachystoma* was derived from a pre-Wisconsin stock of *T. radix*, which may have extended its range during interglacial periods much further to the east than we now know it. The stock could conceivably been isolated by the advent of the Wisconsin glacier, and been able to survive in the Upper Allegheny drainage pattern (originated in pre-Wisconsin times) from which it is now moving northward into suitable areas within the glaciated territory.

From this, it must be surmised that *T. butleri* originated from a later stock of *T. radix* which moved eastward in post-Wisconsin times. The particular type of habitat desired by both species, draws me inevitably to the conclusion that *butleri* was able to establish itself and to succeed in living in a habitat distinct from a "Prairie Peninsula" type of habitat. The finding of *T. radix* in isolated patches of "Prairie Peninsula" in Ohio recently, supports this conclusion. Assuming then that *butleri* does not succeed well in a "Prairie Peninsula" type of habitat, the isolation of this species in Wisconsin is readily understandable. The Prairie Peninsula as outlined by Transeau (1935) gives an ecological reason for the isolation. The plotting of records on the master map used was done as accurately as the data available permitted. It will be seen on the map, that *Thamnophis butleri* generally is not found within known "Prairie Peninsula" types of habitat. Since such is the case, the species is isolated in Wisconsin because it cannot survive in a "Prairie Peninsula" type, and not because *T. radix* gradually excluded it from the Chicago Region as Davis (1932) suggested. This reason would also explain its rather spotty distribution in Indiana, where the "Prairie Peninsula" type of habitat is still fairly prominent, as well as its comparatively abundant distribution throughout the rest of its range, in which the particular prairie type of habitat is thinly spotted or absent.

Thamnophis brachystoma is separated from *T. butleri* by a minimum distance of 70 miles between the two closest records. In this region, northeastern Ohio, several collectors have failed to find either *brachystoma* or *butleri*.

SUMMARY:—*Thamnophis brachystoma* is recognized as a valid species because of the lower number of scale rows and upper labials, as well as by reason of its restricted range in New York and Pennsylvania. *Thamnophis butleri* is isolated in Wisconsin because it prefers a non-"Prairie Peninsula" type of habitat.

I wish to express my sincere thanks to the following persons and institutions for the loan of specimens and for their help: Dr. Howard K. Gloyd, Chicago Academy of Sciences; Dr. Emmett R. Dunn, Academy of Natural Sciences at Philadelphia; Messrs. Karl P. Schmidt and Clifford H. Pope, Chicago Museum of Natural History; Dr. Helen T. Gaige, Museum of Zoology, University of Michigan; Dr. E. B. S. Logier, Royal Ontario Museum of Zoology; Dr. Doris M. Cochran, United States National Museum; Dr. Charles M. Bogert, American Museum of Natural History; Dr. Sherman C. Bishop, University of Rochester; Mr. W. E. Dickinson, Milwaukee Public Museum; and to many others who

have given me aid, particularly in collecting. My special thanks are due to Mr. M. Graham Netting, Carnegie Museum, and Mr. Roger Conant, Philadelphia Zoological Society, for their invaluable aid during this study; and to my wife, Mrs. Ellen M. Smith, for examining specimens and helping with clarifying data.

REFERENCES.

BISHOP, SHERMAN C.

1927. Butler's garter snake in New York. *Copeia*, no. 162: 16-17.

CAHN, ALVIN R.

1929. The herpetology of Waukesha County, Wisconsin. *Copeia*, no. 170: 4-8.

CONANT, ROGER.

1938.1 On the seasonal occurrence of reptiles in Lucas County, Ohio. *Herpetologica*, 1, no. 5: 137-143, fig. 1-2.

1938.2 The reptiles of Ohio. *Amer. Midl. Nat.*, 20, no. 1: 1-200, pls. 1-26, maps 1-38.

COPE, EDWARD D.

1888. On the Eutaenia of Southeastern Indiana. *Proc., U. S. Nat. Mus.*, 11: 399-400.

1892. A new species of Eutaenia from western Pennsylvania. *Amer. Nat.*, 26: 964-5.

1900. The crocodiles, lizards, and snakes of North America. *Ann. Rept. U. S. Nat. Mus. for 1898: 153-1294*, fig. 1-347, pls. 1-36.

DAVIS, D. DWIGHT.

1932. Occurrence of *Thamnophis butleri* Cope in Wisconsin. *Copeia*, 1932, no. 3: 113-118.

DITMARS, RAYMOND L.

1936. The reptiles of North America. New York: Doubleday, Doran and Co., : xvi. +476, pls. 1-135.

FENNEMAN, NEVIN M.

1928. Physiography of Eastern United States. New York: McGraw-Hill Co.: xiii +714, figs. 1-197, pls. 1-7.

FOWLER, HENRY W.

1910. *Thamnophis butleri* in Pennsylvania. *Proc., Acad. Nat. Sci., Philadelphia*, 62: 149.

HASSLER, WILLIAM G.

1932. New locality records for two salamanders and a snake in Cattaraugus County, New York. *Copeia*, 1932, no. 2: 94-96.

LOGIER, E. B. SHELLEY.

1939.1 Butler's gartersnake, *Thamnophis butleri*, in Ontario. *Copeia*, 1939, no. 1: 20-22.

1939.2 The reptiles of Ontario. *Royal Ontario Mus. Zool.*, handbook no. 4: 1-63, pls. 1-8.

NECKER, WALTER L.

1939. Records of amphibians and reptiles of the Chicago Region, 1935-1938. *Bull., Chicago Acad. Sci.*, 6, no. 1: 1-10.

RUTHVEN, ALEXANDER G.

1912. On the breeding habits of Butler's gartersnake. Biol. Bull., 24, no. 1: 18-20.

1915. The gestation period in *Thamnophis butleri* (Cope). Copeia, no. 15: 3-4.

RUTHVEN, ALEXANDER G., CRYSTAL THOMPSON, AND HELEN THOMPSON.

1912. The herpetology of Michigan. Michigan Geol. and Biol. Surv., publ. no. 10, biol. ser. 3: 8-166, pls. 1-20.

RUTHVEN, ALEXANDER G., AND HELEN T. GAIGE.

1928. The herpetology of Michigan. Michigan Handbook Ser., no. 3: ix+229, pls. 1-19.

SCHMIDT, KARL P.

1939. Herpetological evidence for the postglacial eastward extension of the steppe in North America. Ecology, 19, no. 3: 396-407.

SCHMIDT, KARL P., AND WALTER L. NECKER.

1935. Amphibians and reptiles of the Chicago Region. Bull., Chicago Acad. Sci., 5, no. 4: 57-77.

SMITH, ALBERT G.

1945. A one-eyed snake. Copeia, 1945, no. 1: 47.

SPECK, FRANK G.

1918. Testing folk-lore by observations on Butler's gartersnake. Copeia, no. 57: 56-60.

STEJNEGER, LEONHARD.

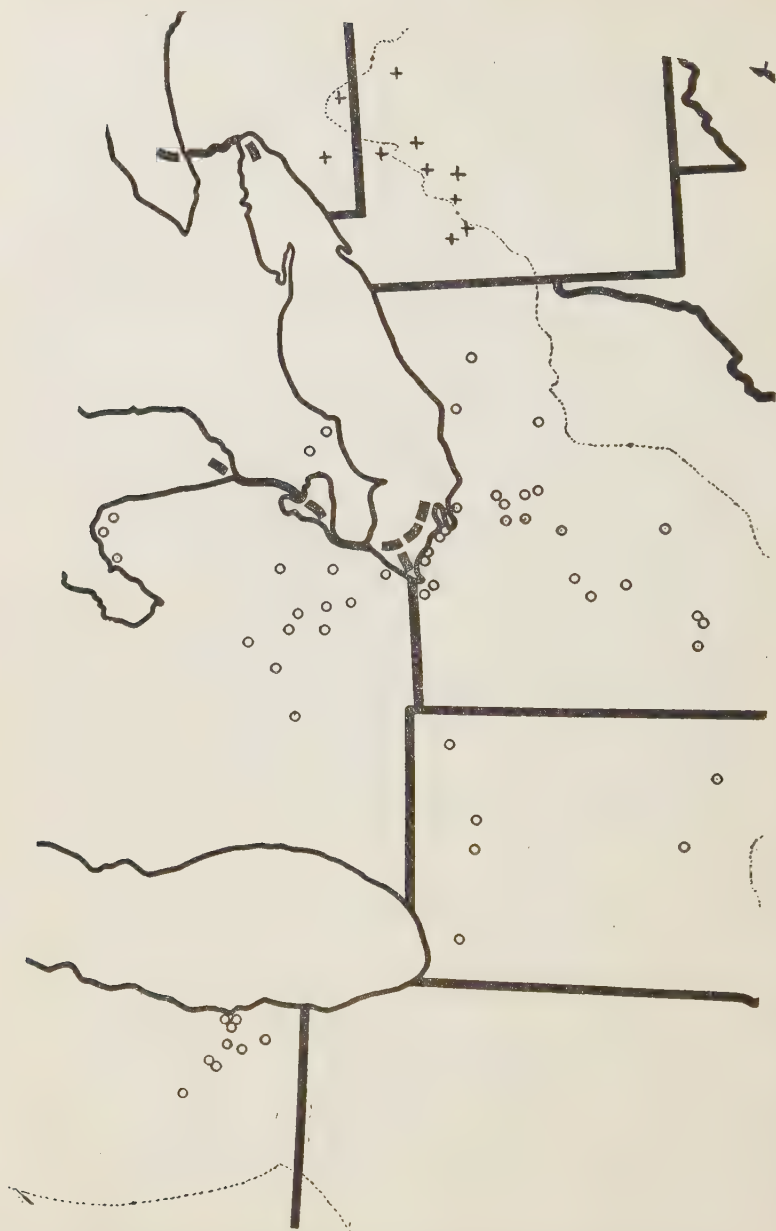
1895. Notes on Butler's gartersnake. Proc., U. S. Nat. Mus., 17: no. 1021: 593-594.

TRANSEAU, EDGAR N.

1935. The Prairie Peninsula. Ecology, 16, no. 3: 423-437, figs. 1-28.

WEED, ALFRED C.

1922. Reptile notes. Copeia, no. 112: 84-87.



Map showing the localities of *Thamnophis bulleri* (circles) and *Thamnophis brachystoma* (crosses). The terminal moraine is outlined.

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

FURTHER NOTES ON THE AEDES SCUTELLARIS
GROUP (DIPTERA, CULICIDAE)

BY ALAN STONE¹ AND D. S. FARNER²

For some time it has been known that the *scutellaris* group of *Aedes* (*Stegomyia*) was represented in the Philippine Islands, but until males were received it was impossible to be certain of the species. The recent arrival at the U. S. National Museum of males from the Philippine Islands showed that, not one, but two species are involved, in both the newly received material and among the previously collected females. One is the widespread *Aedes hebrideus* Edwards; the other, the new species here described and named in honor of the collector. We have also been fortunate in being able to obtain from the British Museum, through the kindness of N. D. Riley and John Smart, a number of males of this group. These specimens give additional information on the systematics and zoogeography of the group. Because additional adult characters have been discovered in the group and in order to facilitate determination, a tentative key to the known species is included.

Aedes (*Stegomyia*) *paullusi*, new species

Aedes (*Stegomyia*) *variegatus* (Doleschall), Bonne-Wepster and Brug, 1932, *Geneesk. Tijdschr. v. Nederland.-Indie* 72 (Bijblad 2): 87 (in part).

Aedes (*Stegomyia*) *scutellaris* (Walker), Bonne-Wepster and Brug, 1937, *Geneesk. Tijdschr. v. Nederland.-Indie* 77 (9/10): 544 (in part).

Male.—Length about 3.5 mm., wing about 2.5 mm. Vertex with broad

¹ Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

² Lieutenant H (S), USNR, Preventive Medicine Division, Bureau of Medicine and Surgery, Navy Department. The opinions expressed in this article are those of the authors and are not to be construed as official or reflecting the views of the Navy Department or of the Naval Service at large.

appressed scales, with median broad white stripe and with two lateral white stripes on each side. Torus with white scales around entire circumference and forming a conspicuous broad inner patch. Clypeus bare. Proboscis dark except for a stripe of pale scales extending almost entire length of ventral surface; palpus about length of proboscis (the latter incomplete in holotype) with dorsal patch of pale scales on base of second segment, pale ring on base of third segment, and extensive pale ventral patches on bases of fourth and fifth segments. Anterior pronotal lobe with many broad appressed white scales continuing the lateral line of vertex; posterior pronotum with some narrow curved dark scales and an elongated patch of broad appressed white scales continuing the white line of vertex and anterior pronotal lobe. Scutum covered with narrow brown scales, with median broad white stripe narrowing posteriorly and faintly forked in the prescutellar area, with indistinct posterior submedian line of narrow yellowish scales, with a patch of broad appressed white scales over wing base, and with an anterior marginal line of white scales (figure 2). Scutellum with appressed broad white scales on all three lobes, and a few dark scales on apex of midlobe. Pleuron with white scales arranged more or less in two parallel lines and scattered spots. Coxae with patches of white scales. Ventral surface of front femur with somewhat interrupted line and apical patch of white scales, posterior surface with a broader, uninterrupted stripe of white scales broadening apically; anterior surface of midfemur with distinct line of white scales separated from apical white patch by dark scales, posterior surface with slightly narrower white line extending to apex; anterior surface of hind femur with broad white longitudinal stripe, widest at base, only slightly interrupted by dark scales from apical white patch, posterior surface with more or less distinct line of white scales, broadest at base, and extending to apex. All tibiae dark. Front tarsi and midtarsi dark with basal white patch on segments I and II; hind tarsal segments I to IV with basal white bands, the band on I from $1/4$ to $1/3$ length of segment and interrupted by dark scales on inner surface, on II about $1/3$ length of segment, on III about $1/2$ length of segment, IV about $2/3$ length of segment; V completely white. Wing scales dark. Abdominal tergite I with lateral sub-basal white spots; abdominal tergites II to VI with sub-basal white bands narrowed dorsally and turning abruptly forward at lateral margin, that on II interrupted (markings on VII and VIII not observed). Sternites II to VI with basal white bands. Genitalia with basal lobe truncate with a ventro-apical area of well-developed setae (figure 1).

Female.—Markings about as in male. Palpus about $1/5$ the length of proboscis with large white patch on dorsal side of apical segment. Proboscis dark with at most a few scattered pale scales on ventral surface. Line of white scales on front femur absent or poorly developed; mid- and posterior femora similar to male. Tergite VII with band broken on either side of a median patch.

Holotype.—Male, San Antonio, Samar, Philippine Islands, December 6, 1944, J. H. Paullus, collector. *Paratypes*: 1 male, N'goles, Cali-

coan Island, Philippine Islands, January 27, 1945; 3 females, San Antonio, Samar, December 6, 1944, Baras, Calicoan Island, January 24, 1945, and small island near Calicoan, February 12, 1945, J. H. Paullus, collector; 1 female, Abuyog, Leyte, Philippine Islands, November 1944, O. H. Graham, collector; 2 males, Taroena, Sangir Islands, March 1928.

Type material deposited in U. S. National Museum (Cat. No. 57313); paratypes from Sangir Islands in British Museum.

The holotype and one paratype were collected in small pools of high organic content. The other paratypes from Mr. Paullus were reared from water in coconut shells.

The basal lobe of the basistyle is easily distinguished from that of all other named species of the *scutellaris* group for which the male genitalia have been described. In addition there are other distinctive morphologic characters in both sexes by which *paullusi* is easily separated from other species of the group. *Aedes paullusi* can be separated from other species of the group by the presence of the ventral white stripe on the male proboscis, by the white line on the anterior surface of the midfemur of both sexes, and by the line of white scales on the anterolateral margin of the scutum (these scales may be lacking in worn specimens). In *quasiscutellaris* there is a faint anterolateral line similar in location to that of *paullusi* but composed of very fine yellowish scales as compared with the conspicuously white scales in *paullusi*. It can also be separated from all other species of the group except *quasiscutellaris*, *tongae*, and *horrescens* by the stripe of white scales on the proboscis of the male.

The species described here as *paullusi* is the same as that observed and described by Bonne-Wepster and Brug (2, pp. 42, 43, 87) as an unnamed variety of *Stegomyia variegata* (Doleschall) from Taroena, Sangir Islands. An examination of two specimens from that island presented to the British Museum by S. L. Brug and H. de Rook confirm this, and these two specimens were therefore included in the paratype series. Bonne-Wepster and Brug's figures and descriptions show the anterolateral line on the scutum and describe the ventral white line on the proboscis of the male, but fail to point out the rather striking markings of the femora which are characteristic of *paullusi*. The hypopygium figured by these authors (2, p. 85) is very similar, if not identical, to that of *paullusi*; the statement that the hypopygium of the males from Taroena does not differ from that of males from other localities implies that this type of hypopygium is widespread. Bonne-Wepster and Brug do not, however, give the locality of the specimen from which their drawing was made. In a later paper these authors (3, p. 87) treated the Taroena form as an aberrant form of *scutellaris* (Walker). This raises the possibility that *paullusi* may be a synonym of *scutellaris* (Walker). However, it should be pointed out that Bonne-Wepster and Brug, in indicating that they had observed hypopygia of the type figured (2, p. 85) from several localities, did not include the Aroe Islands, the type locality of *scutellaris* (Walker). Furthermore, it is obvious that these authors were including more than one species in their "*scutellaris*." Because the genitalia of true *scutellaris* from the Aroe Islands have never been described and further because of

the known tendency of the *scutellaris* group to form endemic species, it appears best to regard *paullusi* as specifically distinct from *scutellaris* at least until topotypical material of the latter is available for study. Barraud's description (1, p. 654) of "*scutellaris*" from the Andaman Islands indicates that the basal lobe may be similar to that of *paullusi*. However, since he does not describe any of the distinctive characters of *paullusi*, the systematic placement of the Andamans form must await examination of material from those islands.

Distribution of *Aedes hebrideus* Edwards

The known range of this species has been extended to the Palau Islands, Ceram, and the Philippine Islands by specimens collected on Pulo Anna, Palau Islands, by C. K. Dorsey, March 1945; at Sawaai, Ceram, December 27, 1931, by S. L. Brug and H. de Rook; and on Calicoan Island, Philippine Islands, by J. H. Paullus, January 27, 1945.

Distribution of *Aedes guamensis* Farner and R. Bohart

The known range of this species, known heretofore from the island of Guam, has been extended to Saipan on the basis of a male collected at Marpi Point by J. E. Webb, Jr., October 31, 1944.

Distribution of *Aedes horrescens* Edwards

In a recent revision of the *scutellaris* group, Farner and Bohart (6, pp. 42, 45) gave the distribution of this species as restricted to the type locality, Taveuni. In a personal communication R. A. Lever has kindly brought to our attention the fact that this species has a much wider distribution. In addition to the type locality and Nabavatu (Lau group) cited by Edwards (5, p. 129), it has been recorded by Paine (9, p. 12) from Vanua Levu, Gau, Narai, Naigani, and Naitauba, and by Lever (8, p. 47) from Suva, Viti Levu.

TENTATIVE KEY TO THE ADULTS OF THE SCUTELLARIS GROUP

The following key is presented, together with a tabulation of geographic distribution, as an aid in preliminary identification of the known species in this group. When the key is used, it must be borne in mind that in several cases externally similar species are easily distinguishable by examination of the male genitalia. This is particularly true in the differentiation of *pernotatus* from *pseudoscutellaris* and *hensilli* from *marshallensis*. No final identifications should be made until the mounts of the hypopygia have been studied and, if possible, compared with the hypopygia of other species of the group. The fact that the *scutellaris* group contains many rather localized species, some probably undescribed, emphasizes the importance of examination of the male genitalia. Apparently *horrescens* Edwards can be distinguished from *pseudoscutellaris* only in the larva and male genitalia. No specimens of *alorensis* Bonne-Wepster

and Brug, *andrewsi* Edwards, or *scutellaris* (Walker) from Aroe Islands have been examined. However, *andrewsi* has been placed in the key on the basis of the original description. The original description of *alorensis* makes it obviously a distinct species on the basis of the figured basal lobe; however, there is not a description of external morphology sufficient to place it in the key. Likewise, the description of *scutellaris*, also a banded species, is too inadequate to permit placing the species in the key. *Aedes albopictus* (Skuse) and *Aedes gurneyi* Stone and R. Bohart, although not members of the group, have been included in the key because of their morphologic similarity, and because their ranges overlap that of some species of the *scutellaris* group; *Aedes pseudalbopictus* Borel, *novalbopictus* Barraud, *subalbopictus* Barraud, and *flavopictus* Yamada, all members of the *albopictus* group, are not included, since their ranges do not overlap that of the *scutellaris* group. *Aedes galloisi* Yamada, reported only from Japan, was originally described as closely allied to *variegatus* (Doleschall) and *albopictus* (Skuse). It is difficult to place and, since no specimens were available for study, has not been included in the key. The morphology of the tarsi and the basal lobe of the dististyle might indicate a relationship to *marshallensis*, although the pattern of white scales of the pleuron, as described, seems to place it in the *albopictus* group. The hind tarsus is similar to that of *marshallensis* in having a dark tip; however, the basal 2/3 of both segments IV and V of the hind tarsus is white, whereas in *marshallensis* segment V is never more than 1/2 white, and segment IV is about 1/4 white.

1. White scales on pleuron arranged irregularly in patches; white scales of patch on posterolateral margin of scutum usually extending only to anterior margin of wing base..... 2
 White scales on pleuron arranged in two parallel and almost continuous stripes and some irregular patches; white scales on posterolateral margin of scutum forming a continuous line with dorsal pleural stripe and extending over wing base almost to patch of pale scales on scutellum..... 3
2. Bands on abdominal tergites basal (touching apex of preceding segments)..... *albopictus*
 Bands on abdominal tergites sub-basal (not touching apex of preceding segment)..... *gurneyi*
3. All white bands of hind tarsus interrupted completely by dark scales on the inner surface *guamensis*
 At least some complete white bands on hind tarsus..... 4
4. Apical half of segment V of hind tarsus dark. . *hensilli*, *marshallensis*
 Segment V of hind tarsus completely white except occasionally for a few scattered light brown scales..... 5
5. Basal white band on segment IV of hind tarsus narrowly interrupted by a row of dark scales, several scales in width, on dorsal surface; tergites with white scales restricted to lunate lateral spots..... *andrewsi*
 Basal white band on segment IV of hind tarsus complete..... 6

6. Basal patches of light scales (white or yellowish) on segments I, II, III, and sometimes on IV and V of fore- and midtarsi; those on IV and V sometimes reduced to a few scales. *pernotatus*
 Basal white patches on fore- and midtarsi restricted to segments I and II. 7
7. Anterior surface of midfemur with distinct line of pale scales extending to or almost to apical patch of white scales; line of white scales on anterolateral margin of scutum (may be lacking in worn specimens). *paullusi*
 Anterior surface of midfemur without distinct line of pale scales; scutum without line of white scales on anterolateral margin (*quasiscutellaris* has a faint line of fine yellowish scales in this position). . . . 8
8. Hind tarsal segment IV with dark band at its widest dimension (inner surface of segment) having a width of more than $1/2$ the length of segment. *tongae*
 Hind tarsal segment IV with dark band at its widest dimension having a width of $1/4$ to $2/5$ (sometimes $1/2$ in *horrescens*) the length of segment. 9
9. Proboscis with ventral longitudinal line of pale scales

horrescens
quasiscutellaris

 Proboscis without ventral longitudinal line of pale scales. 10
10. Abdominal tergites usually without complete bands of white scales; tergite IV never with complete band *pseudoscutellaris*
 Abdominal tergites (except I to III) always with bands of white scales; that on tergite IV either complete or narrowly interrupted. (This character is difficult or impossible to ascertain on worn or engorged specimens.) *hebrideus*

Figures of basal lobes of the hypopygia of the species of the *scutellaris* group appear in the literature as follows:

Edwards (4, p. 102): *andrewsi*, *tongae*, *pseudoscutellaris*, *hebrideus*, *quasiscutellaris* (as *variegatus*).

Farner and R. Bohart (6, p. 122): *quasiscutellaris*, *pseudoscutellaris*, *pernotatus*, *guamensis*, *hebrideus*.

Farner and R. Bohart (7, p. 40): *pernotatus*, *pseudoscutellaris*, *quasiscutellaris*, *tongae*, *guamensis*, *marshallensis*, *hebrideus*.

Stone and R. Bohart (10, p. 224): *marshallensis*, *gurneyi*.

Bonne-Wepster and Brug (2): *albopictus* (p. 75), *paullusi* (p. 85 as *variegata*), *alorensis* (p. 93).

Yamada (11, p. 50): *galloisi*.

The basal lobe of *horrescens* has not been previously figured and therefore is here presented (figure 3). That of *hensilli* is apparently indistinguishable from *guamensis*. Male genitalia of *scutellaris* from the type locality have not been described.

Known Distribution of the Species of the Scutellaris Group:³

SPECIES	DISTRIBUTION
<i>pseudoscutellaris</i>	Eastern Polynesia, Samoa and Wallis Islands, Fiji, Ellice Islands
<i>tongae</i>	Tonga, Solomon Islands ⁴
<i>pernotatus</i>	New Hebrides
<i>horrescens</i>	Fiji
<i>guamensis</i>	Marianas Islands
<i>hensilli</i>	Caroline Islands
<i>marshallensis</i>	Marshall Islands, Gilbert Islands ⁵
<i>quasiscutellaris</i>	Solomon Islands
<i>hebrideus</i>	Palau Islands, New Hebrides, Bismarck Archipelago (?), Queensland (?), New Guinea, Moluccas, Philippines.
<i>paullusi</i>	Moluccas (?), Sangir Islands, Philippines.
<i>scutellaris</i>	Aroe Islands
<i>andrewsi</i>	Christmas Island (south of Java)
<i>alorensis</i>	Lesser Sunda Islands

LITERATURE CITED

- (1) BARRAUD, P. I. 1928. A revision of the culicine mosquitoes of India. Indian Jour. Med. Res. 15:653-[670].
- (2) BONNE-WEPPER, J., and BRUG, S. L. 1932. The subgenus *Stegomyia* in Netherland India. Geneesk. Tijdschr. v. Nederland.-Indie 72 (Bijblad 2): 35-119.
- (3) ——— 1937. Nederlandsch-indische Culicinen. Geneesk. Tijdschr. v. Nederland.-Indie 77 (9/10): 515-617.
- (4) EDWARDS, F. W. 1926. Mosquito notes, VI. Bul. Ent. Res. 17: 101-131.
- (5) ——— 1935. Mosquito notes, XII. Bul. Ent. Res. 26: 127-136.
- (6) FARNER, D. S., and BOHART, R. 1944. Three new species of Australasian *Aedes* (Diptera, Culicidae). Wash. Biol. Soc. Proc. 57: 117-122.
- (7) ——— 1945. A preliminary revision of the *Scutellaris* group of the genus *Aedes*. U. S. Nav. Bul. 44: 37-53.
- (8) LEVER, R. A. 1944. On the breeding places of some local mosquitoes. Fiji Dept. Agr., Agr. Jour. 15: 47-48.
- (9) PAINE, B. A. 1943. An introduction to the mosquitoes of Fiji. Fiji Dept. Agr. Bul. 22. 35 pp. Suva.
- (10) STONE, A., and BOHART, R. 1944. Studies on mosquitoes from the Philippine Islands and Australasia. (Diptera, Culicidae). Wash. Ent. Soc. Proc. 46: [205]-225.
- (11) YAMADA, S. 1921. Description of ten new species of *Aedes* found in Japan, with notes on the relation between some of these mosquitoes and the larvae of *Filaria bancrofti* Cobbold. Annot. Zool. Jap. 10:45-81.

³ *Aedes albopictus* overlaps the *scutellaris* group throughout the insular part of the Oriental Region as well as on Saipan and possibly in the Moluccas; *gurneyi* occurs in the Solomons; *galloisi* has been reported for Japan only.

⁴ Reported from Sikiana, Solomon Islands, by Edwards (2, p. 103); possibly an introduction. This material has been examined in the preparation of this paper and the identification seems to be correct.

⁵ This record is based on examination of females only.

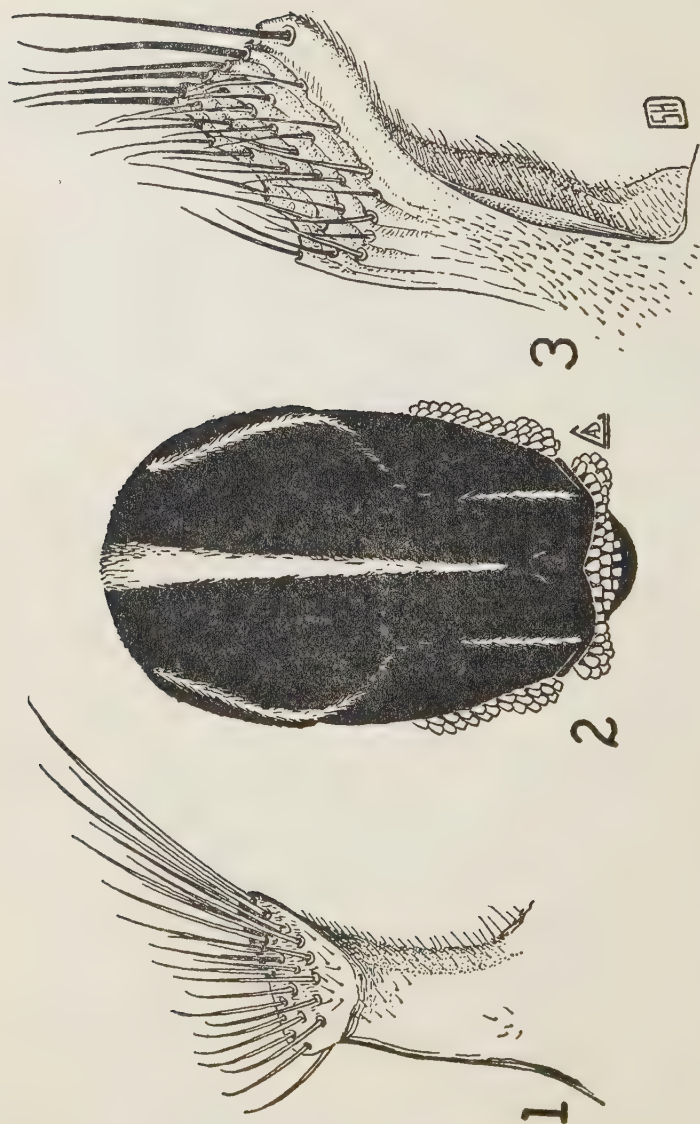


Fig. 1. *Aedes paullusi*, basal lobe of left basistyle, ventral view.

Fig. 2. *Aedes paullusi*, mesonotum, dorsal view.

Fig. 3. *Aedes horrescens*, basal lobe of left basistyle, ventral view.

(Figs. 1 and 2 drawn by Arthur D. Cushman; Fig. 3 by Sara Hoke DeBord).

INDEX.

New names are printed in **heavy type**.

A

Abastor erythrogrammus.....	132
Acartauchenius texana.....	93
Acer pseudoplatanus.....	27, 28, pl. IV
acuminatus, Sciastes.....	94
adsitus, Eutamias q.....	85, 86, 87
Aedes.....	155
albopictus.....	159, 160, 161
alorensis.....	158, 159, 161
andrewsi.....	159, 160, 161
flavopictus.....	159
galloisi.....	159, 160
guamensis.....	60, 61, 158, 159, 160, 161
gurneyi.....	159, 160
hebrideus.....	155, 158, 160, 161
hensilli.....	59, 61, 158, 159, 160, 161
horrescens.....	157, 158, 160, 161, pl. XIV
marshallensis.....	61, 158, 159, 160, 161
novalbopictus.....	159
pauilusi.....	155
pernotatus.....	157, 158, 160, 161, pl. XIV
pseudoalbopictus.....	158, 160, 161
pseudoscutellaris.....	159
quasiscutellaris.....	158, 160, 161
scutellaris.....	157, 160, 161
subalbopictus.....	61, 155, 157, 158, 159, 160, 161
tongae.....	159
variegatus.....	157, 160, 161
Agate sp.....	155, 159, 160
Agelenidae.....	138
Agelenopsis jeffersi.....	94
alachua, Clubiona.....	94, 102, pl. IX
alata, Castianeira.....	98
albicauda, Penelope a.....	97
albifrons, Leptotyphlops.....	125, 126
albiventer, Melomys c.....	29, 31
albopictus, Aedes.....	69, 70, 71
Aldrich, J. W., elected vice president.....	159, 160, 161
Alloteuthis.....	x
alorensis, Aedes.....	22
amazonicus, Capito auratus.....	158, 159, 161
ambitum, Theridion.....	113, 114
Ambystoma texanum.....	96
americana, Antilocapra a.....	39
andinus, Eptesicus.....	3, 4
andrewsi, Aedes.....	108
angularis, Hyla.....	159, 160, 161
anolis, Lygosoma.....	54
Antilocapra americana.....	48, 49
americana.....	3
mexicana.....	3, 4
peninsularis.....	3, 4
sonoriensis.....	3, 4
arcella, Cirsiotrema.....	128
Archiplanus leucoramphus.....	
leucoramphus.....	17
arfakiana, Hyla.....	57
argentinus, Eptesicus.....	109
Argyrodus nephilae.....	95
argyrotis, Penelope.....	125, 126

armiger, Parcixius.....	134
astutis, Bassariscus a.....	105, 106
atkinsae, Cyclopoliarus.....	136
aurantiicinctus, Capito auratus.....	113, 114
auratus, Capito auratus.....	114
auripendulus, Eptesicus.....	109
australis, Melomys.....	71

B

bahamensis, Eptesicus f.....	108
banfieldi, Melomys.....	70
barbata, Penelope a.....	125, 126
Barronopsis.....	95
Bartsch, Paul.....	
A New Tomocyclus from Mexico.....	63-64
bartschi, Urotheutis.....	22, 26, pl. III
Bassariscus.....	105
astutis astutis.....	105, 106
bolei.....	105
consitus.....	105, 106
bavayi, Cirsiotrema.....	127
Beattie, R. K.....	x
Angkor, the jungle-buried city.....	x
beccarii, Tropidophorus.....	48
becki, Hyla.....	55
Belton, Robert.....	ix
Benedict, J. E., Jr., member of council.....	x
berdmorei, Tropidophorus.....	48
biperforatus, Cyclopoliarus.....	136, 137
biperforatus, Ollarius.....	126
bivittata, Tamanka.....	74
Blake, S. F.....	x
elected Recording Secretary.....	x
bolei, Bassariscus a.....	105
bostoniensis, Dictyna.....	93
Bothriocera eborea.....	144, pl. XII
brachystoma, Eutaenia.....	147
brachystoma, Thamnophis.....	147, 149, 150, 151, 154
brasiliensis, Eptesicus.....	107, 108, 109
Bray, R. S., elected Corresponding Secretary.....	x
brongersmai, Hyla.....	56, 57
broomi, Typhlops.....	111
Brotogetis chrysoterpis.....	114
chrysoterpis.....	114, 115
chrysosema.....	114, 115
solimoensis.....	115
tenuifrons.....	114, 115
tuipara.....	114
buccalis, Dipodops.....	96
Burrill, M. D.....	x
Alaskan scenes and biology.....	x
buruensis, Rattus.....	66
butleri, Eutaenia.....	147
butleri, Thamnophis.....	147, 149, 150, 151, 154

C

Calamiana	78, 79
magnus	80
Calogobius	11
Calymmaria cavicola	95
Cambalidae	34
Cambalopsidae	34
campestris, Oliarus	141,
	143, 144, pl. XI, XII
Capito auratus	113
amazonicus	113, 114
aurantiicinctus	113, 114
auratus	114
hypochondriacus	113
insperatus	113
novaolindae	114
punctatus	114
transilens	113
carolinensis, Gastrophyrne	90
Castianeira alata	97
longipalpus	98, 102, pl. X
cavicola, Calymmaria	95
cavicola, Tegenaria	95
Cemophora coccinea	89, 90
certus, Phrurotampus	101
cervinipes, Melomys c.	69, 70, 71
Chamberlin, Ralph V.	
On Some Millipeds from Saipan	33-38
chapmani, Eptesicus	109
chiralensis, Eptesicus	109
chiriquensis, Eptesicus	108
christopheri, Vincentia	134,
	139, 144, pl. XI, XII
Chrotomys	123
whiteheadi	123
mindorensis	123
whiteheadi	123
chrýsopterus, Brotogeris c.	114, 115
chrysosema, Brotogeris c.	114, 115
Cirsotrema	127, 128
arcella	128
bavayi	127
cochles	127, 128
dalli	128, 129
multiporata	127
octolineata	128
pallaryi	127, 129
plexia	127
pumicea	127
ranellina	128
Cirsotremopsis	127, 128
Cixiidae	133
Cixini	133
Cixius	133, 134
walkeri	133
Clubiona	98
alachua	98
johnsoni	98
Clubionidae	97
Cnemidophorus sexlineatus	30
coarctata, Orthomorpha	93
coccinea Cemophora	89, 90
cochlea, Cirsotrema	127, 128
cochlea, Scalaria	127
coccis, Paramyndus	144, pl. XII
coenorum, Rattus r.	67, 68
coeruleus, Gerphonotus c.	7
colombiana, Penelope a.	126
columbi, Leptotyphlops	31
Conant, Roger	
concinulus, Oliarus	134, 141, pl. XII
concolor, Rattus c.	65
Conopistha nephilae	95
Conover, Boardman	
A New Race of Penelope argyrotis from Colom- bia	125-126

consitus, <i>Bassariscus</i> a.....	105, 106
<i>Coronogobius</i>	78, 80
<i>striatus</i>	81
Coupe, A. J.....	x
<i>creolus</i> , <i>Drassyllus</i>	97
<i>crudus</i> , <i>Paramyndus</i>	144, pl. XII
<i>cubensis</i> , <i>Eptesicus</i> f.....	108
<i>Culex jepsoni</i>	59
<i>Cyclopiliarius</i>	135
<i>atkinsae</i>	136
<i>biperforatus</i>	186, 187
<i>jamaicensis</i>	186,
137, 143, 144, pl. XI, XII	
<i>montserratensis</i>	186,
137, 138, 144, pl. XI	
<i>naparimae</i> ... 136, 143, 144, pl. XI, XII	
<i>omani</i>	136, 187

D

halli, Cirsotrema.....	128, 129
darlingtoni, Hyla.....	53
darlingtoni, Tropicophorus.....	47, 48
Dasia vittata.....	50
Davis, F. F.....	xi
New weed killers and fungicides.....	xi
Davis, Malcolm, member of council.....	x
Davis, W. B.....	xi
Dayton, William A.....	27-28
A Tricarpellary Maple.....	21
Decapoda.....	21
Desmognathus.....	
fuscus fuscus.....	39, 40
monticola.....	39, 40, 41, 43, pl. viii
phoca.....	39, 40, 43, pl. viii
Diacira substigmatica.....	140
Diadophis p. punctatus.....	132
Dictyna.....	93
bostoniensis.....	93
savanna.....	93
Dictynidae.....	93
diminutus, Eptesicus.....	108, 109
dimorpha, Markea.....	1, 2
Dipodops.....	96
buccalis.....	96
quinqueimaculata.....	96
disjuncta, Myrmeciza.....	96
diversus, Typhlops.....	111
divinulus, Phrurolithus.....	99
Drassyllus.....	97
creolus.....	97
fallens.....	97
duplex, Zelotes.....	97
Duvall, A. J., elected treasurer.....	97

E

<i>eborea</i> , <i>Bothriocera</i>	144, pl. XII
<i>eboreus</i> , <i>Melomys</i> c.....	69, 70
<i>Elaphe guttata</i>	90
<i>elegans</i> , <i>Hinulia</i>	49
<i>elegans</i> , <i>Lygosoma</i>	49
<i>elegantoides</i> , <i>Lygosoma</i> e.....	49, 60
<i>ephippium</i> , <i>Rattus</i> c.....	66
<i>Epitoneum</i>	127
<i>Epitoniidae</i>	127
<i>Eptesicus</i>	107
<i>andenus</i>	108
<i>argentintus</i>	109
<i>auripendulus</i>	109
<i>brasilienis</i>	107, 108, 109
<i>chapmani</i>	109
<i>chiralensis</i>	109
<i>chiriensis</i>	108
<i>diminutus</i>	108, 109

- Eptesieue 107
 fidelis 109
 furinalis 108
 fuscus 107, 108
 bahamensis 108
 cubensis 108
 hispaniolae 108
 pelliceus 108
 wetmorei 108
 hilarii 109
 inca 109
 innoxius 109
 lynni 107, 109
 magellanicus 109
 melanopterus 109
 montosus 109
 propinquus 108
 punicus 109
 erythrogrammus, Abastor 132
 Eumeces inexpectatus 131, 132
 Euscarthmornis zosterops 45
 flaviviridis 45
 griseiceps 45
 naumburgae 45, 46
 zosterops 45
 Eutaenia 147
 brachystoma 147
 butleri 147
 Eutamias 85
 quadrivittatus 85
 adstius 85, 86, 87
 inyoensis 85, 86, 87
 nevadensis 85, 86, 87
 everetti, Hyla 54
 Ewan, J. A. xi
 excelsa, Grallaria e. 20
 exigua, Nyctiprogne l. 117, 118, 119
- F
- fallens, Drassyllus 97
 Farner, D. S.
 A New Species of Aedes
 from the Caroline
 Islands 59-62
 Fennah, R. G.
 The Cixini of the Lesser
 Antilles (Homoptera:
 Fulgoroidea) 133-146
 fidelis, Eptesicus 109
 flavipes, Lygosoma 50
 flavopictus, Aedes 159
 flavoviridis, Euscarthmornis z. 45
 foetidus, Gymnoderus 17
 formicarius, Icius 101
 formosus, Herreolus 15
 Fowler, J. A.
 Elected member of coun-
 cil x
 Distributional Notes on
 Two Local Salaman-
 der Subspecies ix
 Notes on Cemophora coc-
 cinea (Blumenbach) in
 Maryland and the Dis-
 trict of Columbia vi-
 cinity 89-90
 Friedmann, Herbert
 A New Ant-Thrush from
 Venezuela 83-84
 Two New Birds from the
 Upper Rio Negro,
 Brazil 113-116
 The Genus Nyctiprogne 117-120
 furinalis, Eptesicus 108
 fuscus, Desmognathus f. 39, 40
 fuscus, Eptesicus 107, 108
- G
- galloisi, Aedes 159, 160
 Gastrophryne carolinensis 90
 Gebhart, J. W. ix
 General Notes 27-28, 89 90, 131-132
 Gerrhonotus 5
 coeruleus 7
 coeruleus 7
 palmeri 7, 8
 principis 7
 shastensis 7
 utahensis 6, pl. I, II
 gertschi, Nevantistea 91, 101, 102, pl. X
 getulus, Lampropeltis g. 90
 gigantea, Grallaria 17, 18, 19, 20
 Gilmore, C. W. xi
 Gnaphosidae 97
 Goldman, E. A.
 A New Pronghorn Ante-
 lope from Sonora 3-4
 A New Cacomistle from
 Guerrero 105-106
 goodnighti, Phrurolithus 99, 102, pl. X
 Grallaria excelsa excelsa 20
 gigantea 17, 18, 19, 20
 hylodroma 18, 19, 20
 lehmanni 19, 20
 rufula 17
 saturata 17
 Grammonota texana 93
 grenadana, Vincentea 134, 140, 144,
 pl. XI, XII
 griseiceps, Euscarthmornis z. 45
 Grobman, Arnold B.
 The identity of Desmog-
 nathus phoca (Matthes)
 and of Desmognathus
 monticola Dunn 39-44
 guamensis, Aedes 60,
 61, 158, 159, 160, 161
 guatemalensis, Tomocyclus 63
 gurneyi, Aedes 159, 160
 guttata, Elaphe 90
 Gymnoderus foetidus 17
- H
- Hahnidae 101
 Hardy, Ross
 The Taxonomic Status of
 Some Chipmunks of
 the Genus Eutamias in
 southwestern Utah 85-88
 hebrideus, Aedes 155, 158, 160, 161
 hensilli, Aedes 59, 61, 158, 159, 160, 161
 Herre, Albert W. C. T.
 Notes on Fishes in the
 Zoological Museum of
 Stanford University
 XIV. A New Genus and
 Three New Species of
 Gobies from the Philip-
 pines 11-16
 XVIII. Two New Spe-
 cies of Tamanka, with
 a Key to the Species
 from the Philippines
 and China 73-76
 XIX. Two New Philip-
 pines Gobies, with Key
 to the Genera of Go-
 bies with Vomerine
 Teeth 77-82
 Herreolus 14, 15
 formosus 15
 philippinus 14, 15
 Hess, J. W., Australian Wild-
 life and scenes xi

hewanorae , Vincentea.....	134,	leucoramphus , Archiplanus...	17
139, 143, 144, pl. XI, XII		Lincoln, F. C., elected vice	
hilarii , Eptesicus.....	109	president.....	x
Hinulia elegans	49	littoralis , Melomys.....	71
hispaniolae , Eptesicus f.....	108	Lolliginidae	21
Hoffman, I. N. , member of		Loligo.....	21, 22, 23
council.....	x	longipalpus , Castianeira.....	98, 102, pl. X
Hoffman, Richard L.		lobulus , Lygosoma e.....	49, 50
Range Extension for		lopezi , Mindorogobius.....	12, 13
Eumeces inexpectatus		Loveridge, Arthur	
Taylor.....	131-132	New Scincid Lizards of	
horrescens , Aedes.....	157,	the Genera Tropido-	
158, 160, 161, pl. XIV		phorus and Lygosoma	
Humphrey, H. B. , The Mak-		from New Guinea.....	47-52
ing of a Naturalist.....	x	New Tree-Frogs of the	
Hyla	53	Genera <i>Hyla</i> and <i>Nycti-</i>	
angularis	54	timystes from New	
arfakiana	57	Guinea.....	53-58
becki	55	A New Blind Snake (Ty-	
brongersmai	56, 57	phlops toveli) from	
darlingtoni	53	Darwin, Australia.....	111-112
everetti	54	Lowdermilk, W. C.	ix
papuensis	53	Collaboration with China	
vagabunda	55	in soil conservation to	
Hylella wolterstorffi	56	increase food produc-	
hydroma , Grallaria g.....	18, 19, 20	tion.....	ix
hypochoondriacus , Capito		lunai , Tomocyclus.....	63
auratus	113	Lygosoma	47
I.....		anolis	48, 49
Icius formicarius	101	elegans	49
inca , Eptesicus.....	109	elegantoides	49, 50
inexpectatus , Eumeces.....	131, 132	lobulus	49, 50
Inga	140	flavipes	50
innoxius , Eptesicus.....	109	parkeri	50
insperatus , Capito auratus.....	114	prehensicauda	48, 49
interrupta , Vincentia.....	133,	pulchellum	50
138, 139, 144, pl. XI, XII		lynni , Eptesicus.....	107, 109
intervallatum , Theridion.....	96	M.....	
Intonsagobius	11, 12, 78	McHenry, D. E. , member of	
inyoensis , Eutamias q.....	85, 86, 87	council.....	x
J.....		Macrodonogobius	12, 78
jacobsoni , Prosopodesmus.....	33	magellanicus , Eptesicus.....	109
jamaicensis , Cyclopodiarus.....	136,	magnoris , Calamiana.....	80
137, 143, 144, pl. XI, XII		maidis , Ollarius.....	141, 143, 144, pl. XI
jeffersi , Agelenopsis.....	94, 102, pl. IX	Manfredi, F.	ix
jepsoni , Culex.....	59	Mangarinus	12, 79
johnsoni , Clubiona.....	98	maple , sycamore.....	27, 28
Keefe, Anselm	x	mariana , Saipanella.....	37, pl. VII
Kellogg, Remington		Markea	1, 2
Two Rats from Morotai		dimorpha	1, 2
Island.....	65-68	Mars	12, 79
A New Australian Naked-		marshallensis , Aedes.....	61, 158, 159, 160, 161
tailed Rat (Melomys).....	69-72	Melanoliarus	135, 141
Two New Philippine Ro-		melanoleucus , Pituophis m.....	90
dents.....	121-124	melanopterus , Eptesicus.....	109
Kirner, W. R.		Melomys	69
New Rodenticides and		australius	71
Insect Repellents	xi	banfieldi	70
L.....		cervinipes	
Lampropeltis g. getulus	90	albiventer	69, 70, 71
laotus , Tropidophorus.....	48	cervinipes	69, 70, 71
latifascia , Nyctiprogne.....	118, 119	eboreus	69, 70
Laufe, Leonard E.	29	littoralis	71
lehmanni , Grallaria g.....	19, 20	murinus	71
Leiopisma	48, 49	Merinthopodium	2
unicolor	90	mesaeus , Penelope a.....	125, 126
Leptotyphlops	29	mexicana , Antilocapra a.....	3, 4
albifrons	29, 31	Micaria quinquenotata	99
columbi	31	Miconia	140
rufidorsum	29, 31	Micryphantidae	93
striatula	29, 30, 31	milneana , Nyctimystes.....	57
tenella	29, 31	mindanensis , Rattus r.....	122
leucopyga , Nyctiprogne 1.....	117, 118	mindora , Tamanka.....	74, 75
		mindora , Vaimosa.....	13
		mindorensis , Chrotomys	
		whiteheadi.....	123

- Mindorogobius**..... 11, 12, 78
lopezi..... 12, 13
Mnemosyne..... 135
moquardi, *Tropidophorus*..... 48
montana, *Nyctimystes*..... 58
montanus, *Philodromus*..... 97
monticola, *Desmognathus*..... 39,
40, 41, 43, pl. VIII
montosus, *Eptesicus*..... 109
montserratisensis, *Cyclopiliarius*..... 136
137, 138, 144, pl. XI
morotaiensis, *Rattus*..... 66
Morrison, J. P. E., Zoogeno-
graphic notes on some
North American snails..... x
Morton, C. V.
A New Species of *Mar-*
kea from Colombia..... 1-2
mossi, *Sciastes*..... 93, 102, pl. IX
multiporata, *Cirsotrema*..... 127
Muma, Martin H.
New and Interesting
Spiders from Mary-
land..... 91-104
murinus, *Melomys*..... 71
Myersina..... 12, 79
Myrmeciza disjuncta..... 83
- N
- naparimae*, *Cyclopiliarius*..... 136
143, 144, pl. XI, XII
naumburgae, *Euscarthmornis* z..... 45, 46
Neoantistea gertschi..... 91, 101, 102, pl. X
nephilae, *Argyrodes*..... 95
Conopistha..... 95
neyadensis, *Eutamias* q..... 85, 86, 87
novalbopictus, *Aedes*..... 159
novalindae, *Capito auratus*..... 114
Nyctimystes..... 53
milneana..... 57
montana..... 58
papua..... 58
semipalmata..... 58
Nyctiprogne..... 117
latifascia..... 118, 119
leucopyga exigua..... 117, 118, 119
leucopyga..... 117, 118
- O
- obtectus*, *Opisthoporodesmus*..... 33
octolineata, *Cirsotrema*..... 128
octonarius, *Uloborus*..... 91, 102, pl. IX
Oliarissa..... 134
Oliarus..... 133, 140
biperforatus..... 136
campestris..... 141, 143, 144, pl. XI, XII
concinulus..... 134, 144, pl. XII
maidis..... 141, 143, 144, pl. XI
walkeri..... 133
olivaceiceps, *Penelope a.*..... 126
omani, *Cyclopiliarius*..... 136, 137
Opisthoporodesmus obtectus..... 33
Orthomorpha coarctata..... 33
- P
- pallaryi*, *Cirsotrema*..... 127, 129
palmeri, *Gerrhonotus* c..... 7, 8
papua, *Nyctimystes*..... 58
papuensis, *Hyla*..... 53
Papacixius..... 134
armiger..... 134
Paramyndus..... 144
cocois..... 144, pl. XII
crudus..... 144, pl. XII
parkeri, *Lygosoma*..... 50
pauulli, *Aedes*..... 155,
157, 158, 160, 161, pl. XIV
- Peel*, S. M..... xi
pelliceus, *Eptesicus* f..... 108
Penelope argyrotis..... 125
albicauda..... 125, 126
argyrotis..... 126
barbata..... 125, 126
colombiana..... 126
mesaeus..... 125, 126
olivaceiceps..... 126
peninsularis, *Antilocapra a.*..... 3, 4
pernotatus, *Aedes*..... 158, 160, 161
Phagostrophus riseri..... 33, 36, pl. VI
philippina, *Tamanka*..... 74, 75
philippinus, *Herreolus*..... 14, 15
Phelodromus montanus..... 97
phoca, *Desmognathus*..... 39, 40, 43, pl. VIII
phoca, *Salamandra*..... 39, 40
Phrurolithus..... 99
divinulus..... 99
goodnighti..... 99, 102, pl. X
pipensis..... 91, 100, 102, pl. X
similis..... 100
Phrurotimpus..... 101
certus..... 101
subtropicus..... 101
pipensis, *Phrurolithus*..... 91, 100, 102, pl. X
Pituophis m. melanoleucus..... 90
planetree..... 27, 28
plexis, *Cirsotrema*..... 127
prehensicauda, *Lygosoma*..... 48, 49
principis, *Gerrhonotus* c..... 7
propinquus, *Eptesicus*..... 108
Prosopodesmus jacobsoni..... 33
pseudoalbopictus, *Aedes*..... 159
pseudoplatanus, *Acer*..... 27, 28, pl. IV
pseudoscutellaris, *Aedes*..... 158, 160, 161
pulchellum, *Lygosoma*..... 50
pumicea, *Cirsotrema*..... 127
punicus, *Eptesicus*..... 109
punctatus, *Capito auratus*..... 114
punctatus, *Diadophis p.*..... 132
- Q
- quasiscutellaris*, *Aedes*..... 157, 160, 161
quinquemaculata, *Dipoena*..... 96
quinenotata, *Micaria*..... 99
- R
- rabuni*, *Theridion*..... 97
radix, *Thamnophis*..... 147, 150, 151
rajah, *Rattus*..... 68
ranellina, *Cirsotrema*..... 128
Rattus.....
buruensis..... 66
concolor..... 65
concolor..... 65
ephippium..... 66
solatus..... 65, 66
morotaiensis..... 66
rajah..... 68
rattus.....
mindanensis..... 122
umbriventer..... 121
raveni..... 66
ringens..... 67
coenorum..... 67, 68
ringens..... 67, 68
todayensis..... 66
vulcani..... 66
raveni, *Rattus*..... 66
Rehder, Harald A.
A New Genus and Species
of Squids from the
Philippines..... 21-26
Two New Species of *Cir-*
sotrema (*Epitoniidae*)
from Florida..... 127-130
reticulateum, *Theridion*..... 91, 96

Rhinotus.....	35	Tegenaria cavicola.....	95
ringens, Rattus r.....	67, 68	tenella, Leptotyphlops.....	29, 31
riseri, Phagostrophus.....	33, 36, pl. VI	tenuifrons, Brotogeris c.....	114, 115
rufidorsum, Leptotyphlops.....	29, 31	Teuthoidea.....	21
rufula, Grallaria.....	17	texana, Acartauchenius.....	93
S		texana, Grammonota.....	93
Saipanella.....	34	texanum, Ambystoma.....	39
marianna.....	34, 37, pl. VII	Thamnophis.....	
Salamandra phoca.....	39, 40	brachystoma.....	147, 149, 150, 151, 154
Salticidae.....	101	butleri.....	147, 149, 150, 151, 154
saturata, Grallaria r.....	17	radix.....	147, 150, 151
savanna, Dictyna.....	93	Theridiidae.....	95
Scalaria.....		Theridion.....	
cochlea.....	127	ambitum.....	96
varicosa.....	127	intervallatum.....	96
Schmitt, W. L., elected vice president.....	x	rabuni.....	97
Sciastes.....		reticulatum.....	91, 96
acuminatus.....	94	Thomisidae.....	97
mossi.....	93, 102, pl. IX	Thone, F., elected president.....	x
vicosanus.....	94	Exhibition of new biological publications.....	x, xi
scutellaris, Aedes.....	61	todayensis, Rattus.....	66
155, 157 158, 159, 160, 161		Todd, F. E.....	xi
semipalmata, Nyctimystes.....	58	Tomocyclus.....	63
sexlineatus, Cnemidophorus.....	90	guatemalensis.....	63
Sexton, R. L., Pribilof Islands, summer home of the fur seal.....	xi	lunai.....	63
Shamel, H. Harold.....		tongae, Aedes.....	157, 160, 161
A New Eptesicus from Jamaica.....	107-110	tovelli, Typhlops.....	111
shastensis, Gerrhonotus c.....	7	transilens, Capito auratus.....	113
siitensis, Tamanka.....	73, 74	Trayer, C. W., The magic of new wood products.....	x
similis, Phurrolithus.....	100	Tropidophorus.....	47, 48
Smilobobius.....	12, 79	becarii.....	48
Smith, Albert G.....		berdmorei.....	48
The Status of Thamnophis butleri Cope, and a Redescription of Thamnophis brachystoma (Cope).....	147-154	darlingtoni.....	47, 48
Smith, Hobart M. and Leonard E. Laufe.....		laotus.....	48
A New South American Leptotyphlops.....	29-32	mocquardi.....	48
solatus, Rattus c.....	65, 66	tuipara, Brotogeris c.....	114
solimoensis, Brotogeris c.....	115	Typhlops.....	111
sonoriensis, Antilocapra a.....	3, 4	broomi.....	111
Stegomyia.....	59, 155	diversus.....	111
variegata.....	157	tovelli.....	111
Stone, Alan, and D. S. Farner.....	00	U	
Further Notes on the Aedes scutellaris Group (Diptera, Culicidae).....	155-162	Uloboridae.....	91
striatula, Leptotyphlops.....	29, 30, 31	Uloborus octonarius.....	91, 102, pl. IX
striatus, Coronogobius.....	81	umbra, Tamanka.....	74
subalbopictus, Aedes.....	159	umbriventer, Rattus r.....	121
substigmatica, Diacira.....	140	unicolor, Leiopisma.....	90
substigmatica, Vincentia.....	140	Uroteuthis.....	21, 22
subtropicus, Phurrotempus.....	101	bartschi.....	22, 26, pl. III
Swift, L. W.....		utahensis, Gerrhonotus c.....	6, pl. I, II
A glimpse of National Forest Wildlife.....	ix	V	
Sycamore maple.....	27, 28	vagabunda, Hyla.....	55
T		Vaimosa.....	13, 73, 74
tagala, Tamanka.....	74	mindora.....	13
talavera, Tamanka.....	74	varicosa, Scalaria.....	127
Tamanka.....	73, 74	variegata, Stegomyia.....	157
bivittata.....	74	variegatus, Aedes.....	155, 159, 160
mindora.....	74, 75	vicosanus, Sciastes.....	94
philippina.....	74, 75	Vincentia.....	133, 134, 135, 138
siitensis.....	73, 74	christopheri.....	134, 139, 144, pl. XI, XII
tagala.....	74	grenadana.....	134, 140, 144, pl. XI, XII
talavera.....	74	hewanorrae.....	134
umbra.....	74	139, 143, 144, pl. XI, XII	133
		interrupta.....	133
		138, 139, 144, pl. XI, XII	140
		substigmatica.....	140
		vittata, Dasia.....	50
		vulcani, Rattus.....	66
		W	
		Wade, J. S., elected vice president.....	x

Waite, M. B.....			
Note on Curing Sweet		wetmorei, Eptesicus f.....	108
Potatoes; and Note on		whiteheadi, Chrotomys w.....	123
Effect of Monthly		wolterstorffi, Hylella.....	56
Rainfall on Crops.....		Woodbury, Angus M.....	
Note on Deer Popula-	ix	A New <i>Gerrhonotus</i> Liz-	
tion in Ogle County,		ard from Utah.....	5-10
Illinois.....	x		
Exhibition of new bio-			Z
logical publications.....	x		
Death of.....	xi	Zelotes duplex.....	97
walkeri, Cixius.....	133	Zimmer, John T.....	
Oliarus.....	133	A New Subspecies of	
Wetmore, Alexander.....		<i>Euscarthmornis zost-</i>	
A Review of the Giant		erops.....	45-46
Antpitta, <i>Grallaria</i>		Zosterops, <i>euscarthmornis</i>	45
<i>gigantea</i>	17-20		

